

TRINIDAD AND TOBAGO



MINISTRY OF PETROLEUM & MINES

# ANNUAL REPORT

FOR THE YEAR

# 1970



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## FOREWORD

During the past decade the Petroleum Industry of Trinidad and Tobago has been regarded as the prime mover of economic growth in the Country. The performance of this sector, therefore is a matter of considerable significance to both the Nation and its people.

The rapid development of Trinidad Northern Areas' (T.N.A.) Soldado main marine field, located in the Gulf of Paria, during 1957 to 1961, was mainly responsible for the accelerated overall growth of the Country's crude oil production during this period. The subsequent natural decline of this marine field and the continued downward trend of crude oil production on land during 1962 to 1965 both coupled to project at that time, a gloomy forecast for Trinidad and Tobago's Petroleum Producing Industry.

A new trend of increasing rates of crude oil production was subsequently attained between 1965 and 1968 by the discovery of Texaco's Navette Field in Guayaguayare, and by T.N.A.'s North and East Soldado fields; this trend was climaxed in February, 1968, by the record daily average rate of production of 192,400 barrels, and in the highest annual production in the Nation's history of 66.9 million barrels in 1968.

The subsequent decline in crude oil production between March 1968 to date, and the pessimistic picture of the Country's Petroleum Production Industry have been dramatically reversed with the advent of the significant discoveries of crude oil and natural gas by AMOCO Trinidad Oil Company off Trinidad's Eastern Continental Shelf. The Country can now look forward to the future with confidence in a rejuvenated Petroleum Industry.

The year 1970, therefore, could be regarded as the renaissance of the Petroleum Industry of Trinidad and Tobago, since the continual search for new reserves of oil and gas on our Continental Shelf, commenced in earlier years, had found full confirmation of the new discoveries in the beginning of the decade of the seventies. The year 1970 also witnessed the promulgation of the Petroleum Act and its Regulations and the issuing of new licences for exploration and production of the North Coast Continental Shelf.

The Ministry regrets the delay in releasing the 1970 Annual Report which was due to circumstances which could not have been anticipated.

The Ministry also avails itself of this opportunity to sincerely thank all those organizations who contributed data for this Report and wishes to place on record its deep appreciation of the excellent co-operation from all the members of its staff and the UN Experts who were attached to the Ministry during the year.

Ministry of Petroleum and Mines.

## HIGHLIGHTS OF THE PETROLEUM INDUSTRY DURING 1970

Highlights of the petroleum industry during 1970 include the following:—

- (1) The Petroleum Regulations made pursuant to the Petroleum Act 1969, were enacted in January, 1970. These regulations make provision (*inter alia*) for the granting of licences by the Minister of Petroleum and Mines.
- (2) As a necessity for increasing the Exploration and drilling activities in Trinidad and Tobago, a resolution was passed by the House of Representatives allowing the exemption from import duties for a seven (7) year period, all petroleum equipment, material and supplies imported for use in offshore oil exploration operations.
- (3) A total of nine (9) Exploration and Production (Public Petroleum Rights) Licences were granted to four (4) privately-formed consortia and the occidental of Trinidad Inc., to carry out exploration and production operations in the North Coast offshore area. A total area of about 1.57 million acres is now under licence in the region of the North Coast.
- (4) An Exploration and Production (Public Petroleum Rights) Licence was granted to Texaco Trinidad Inc. to carry on exploration and production operations in the submarine area lying to the south of Trinidad over an area of approximately 175,900 acres.
- (5) An Oil Company with 50.1% Government participation started development drilling operations from a slant-rig on a platform some six (6) miles off the East Coast of the Island in seventy-five (75) feet of water. Amoco Trinidad Inc. also constructed their first development platform off the East Coast in some 190 feet of water and about twenty-five (25) miles offshore. The Platform is sited in the offshore Point Radix area.
- (6) A ministerial mission visited Washington D.C. where bilateral talks were held with officers of the U.S. Department of State on U.S. oil import policy. The amendments to the U.S. oil import regulations which particularly affect the oil industry of Trinidad and Tobago were examined.

## SUMMARY

Trinidad and Tobago's crude oil production continued to decline throughout 1970 with the result that this year's volume of crude oil produced was 11% less than the quantity of oil produced during the previous year. The production picture should be very much brighter in 1971, as drilling off the East Coast have proven up substantial reserves of crude oil condensate and natural gas. In the sphere of drilling, 1970 could be considered a pivotal year for the country's industry. The diminishing success-ratio for land exploration activity, necessitated a definite increase in exploration activity in the island's marine areas. At the end of the year, there was a definite upswing in the tempo of drilling activity, and 1971 should see a much larger improvement over the 1970 total footage drilled of 663,025 ft.

In the refining sector of the industry, refining throughput for the year was maintained at a healthy 154.9 million barrels.

Table I summarises and compares overall production and drilling activity in Trinidad and Tobago for the years 1967, 1968, 1969 and 1970. A continuing increase in the island's Gas—Oil—Ratio was evidenced indicating reduced efficiency in the natural depletion mechanism. Figures II and III also vividly illustrate annual drilling and production statistics.

The drilling success-ratio which had been decreasing steadily over the years from 90.3% in 1967 to 76.2% in 1969, recovered to the level of 79% during 1970 which reflected the many East Coast successes.



**TABLE I**  
**Summary of Statistics for the Trinidad and Tobago Petroleum Industry – 1967–1970**

	1967	1968	1969	1970
Annual Crude Oil Production (barrels) ...	64,994,582	66,903,906	57,418,493	51,046,893
Annual Natural Gas Production (mscf) ...	140,338,345	157,444,945	137,502,590	121,059,606
Average GOR (scf/barrel) ... ..	2,160	2,264	2,394	2,372
Annual CHPS (Natural Gasoline) Production (barrels) ... ..	191,995	163,670	150,466	168,460
Daily Refinery Capacity (barrels/day) ...	405,000	430,000	433,000	436,000
Annual Refinery Throughput (barrels/year)	138,924,636	151,282,098	154,076,702	154,860,261
Total Wells completed during the year ...	221	175	130	135
Average depth of completed wells (feet) ...	4,328	5,356	5,468	4,917
Total footage drilled during the year ...	928,210	942,686	690,671	663,743
Oil and Gas Wells completed during the year	197	151	99	107
Drilling success-ratio (per cent) ... ..	90.3	86.9	76.2	79
Proven Crude Oil Reserves (million barrels)	612	N.A.	N.A.	N.A.
Acreage developed ... ..	42,175	43,630	44,915	
Average Rigs running ... ..	9.5	8.2	7.0	7.0

### GEOLOGICAL AND GEOPHYSICAL ACTIVITY

As a follow-up to the joint seismic survey which was carried out by the Government of Trinidad and Tobago and the United Nations in the North Coast marine area in late 1969, the results and interpretation were made available to all registered parties. The Companies were subsequently invited to submit confidential bids on a competitive basis for exploration and production licences.

The area was divided into blocks defined by 10 minutes of latitude and 10 minutes of longitude and encompassing approximately 83,000 acres each.

The criteria laid down for the competitive bidding are enunciated in the section covering Legal Developments.

Exploration and production licences were issued to the companies:—

1. Amerada Hess Corporation of Trinidad and Tobago and 565 Corporation.
2. DEMINEX and AGIP SpA.
3. Occidental of Trinidad Inc.
4. Oceanic Exploration and Development Corporation, Santa Fe International Corporation and Terra Trinidad and Tobago Inc.
5. Phillips Petroleum Caribbean Ltd., Cleary Production Corporation and Apco Oil Corporation.

The licensed areas are shown in Figure I.

Geophysical activity for 1970 was conducted only in marine areas. A 'group shoot' or joint seismic survey of the North Coast Marine area was carried out by all of the licensees except the Amerada Hess group. Surveys off the East Coast of Trinidad were conducted by Amoco Trinidad Ltd., and Texaco Trinidad Inc. A total of 3,041 line miles were shot over 1.93 party months. See Table II and Fig. I. (Hatched Area).

No surface geological or onshore geophysical work was carried out during the year 1970.

**TABLE II**  
**Party Months of Geological and Geophysical Exploration in Trinidad and Tobago – 1970**

Company	Surface Geology	Seismic	Total
Amoco Trinidad Ltd.	0	0.73	0.73
Texaco Trinidad Inc.	0	0.20	0.20
Phillips Petroleum Caribbean Ltd.	0)		
Deminex	0)	1.0	1.0
Occidental of Trinidad Inc.	0)		
Oceanic Exploration & Dev. Corp.	0)		
<b>TOTALS</b>		1.93	1.93

### DRILLING

The terrifying lull which had crept into the activity of the Petroleum Industry of Trinidad and Tobago in 1969 was broken by the announcement of significant oil and gas discoveries by Amoco Trinidad Oil Company Ltd., off the East Coast of Trinidad during 1970. During the first nine (9) months of the year, there were only seven (7) drilling rigs in operation. But immediately following Texaco's increased exploratory efforts, drilling-rig-activity increased to twelve (12) rig months during the last three months (3). Among the important rigs in operation during the year were:— Mariner 1 – a semi-submersible drilling ship; Transworld 54 – a submersible drilling barge; and two development rigs for use on drilling platforms erected in the East Coast.

Mariner 1 joined the Bluewater III in February 1970 for carrying out further exploratory and outstep drilling to delineate the oil and gas fields in the East Coast marine leases for Amoco.

The Transworld 54 was used by Texaco Trinidad Inc. to drill a deep exploratory well to test a seismic structure in their recently acquired South Coast Marine acreage. This well at 17,153 ft. ultimately became the deepest well drilled in Trinidad and Tobago to date.

Probably the most unusual of drilling rigs used in Trinidad, was Trinidad-Tesoro's slant-rig, which has the capability of drilling with the derrick slanted at angles between 0 and 30 degrees from the vertical position.

In 1970, twice as much footage was drilled for development wells as for exploratory wells. The total footage drilled for this year was 663,025 feet or about 26,000 feet less than that of 1969. Appendix 2A shows a breakdown of the footage drilled in 1970.

#### Exploratory Drilling:

There were 21 exploratory wells drilled and completed during 1970 with a success ratio of 38% as oil and/or gas producers. At the end of the year, there were 5 exploratory wells either under testing or still drilling.

Amoco Trinidad Oil Co., in the process of drilling 14 exploratory and semi-exploratory holes, discovered a new gas and condensate field in the East Queen Beach Area (EQB). They also further delineated the oil producing structure in the offshore Point Radix area (OPR) and the gas field in the South East Galeota area (SEG). The only well drilled to the Gros Morne sands in the South Galeota area was abandoned dry. Seismic and subsurface geology provided the main basis for all of Amoco's exploratory wells.

On the basis of subsurface geology, Trinidad Northern Areas drilled two semi-exploratory wells for the Cruse sands in the East Soldado area and on the north flank of the Soldado anticline in the Main Field. Unfortunately, both wells were abandoned due to insufficient thicknesses of hydrocarbon bearing sands.

Trinidad-Tesoro Petroleum Co. Ltd. – drilled one semi-appraisal well in their Galeota Platform off the East Coast of Trinidad. The well was designed to test some deep horizons in the Gros Morne series. Although drilling was completed during 1970, the well was under an extended testing programme.

Of the nine (9) exploratory and semi-appraisal wells which were drilled by Texaco Trinidad Inc., seven (7) of them were abandoned dry. Four (4) of these wells were drilled from onshore drill sites to offshore targets. The first of these was ES-1 which was designed to test a possible stratigraphically trapped channel sand of miocene age. This was done on the basis of limited seismic and subsurface



TABLE III

Summary of Wildcat Drilling in Trinidad and Tobago - 1970

Operator	Well Name	Index Map Reference	Basis for Location	LAHEE Explor. Class	Completion Date	Total Depth (Feet)	Name and/or Age of Deepest Formation	Results/Remarks
AMOCO Trinidad Oil Co.	S.E.G. 5	M - 36	Seis SSG	B <sub>1</sub>	5. 4.70	12,010	Miocene	Gas Producer
	S.E.G. 6	C - 36	Seis SSG	B <sub>1</sub>	27. 5.70	14,050	Miocene	Gas Producer
	OPR - 6	H - 33	Seis SSG	B <sub>1</sub>	21. 3.70	15,010	Miocene	Gas and Condensate drilled for information only
	OPR - 7	G - 32	Seis SSG	B <sub>1</sub>	3. 4.70	8,505	Miocene Gros Morne	Gas
	OPR - 8	G - 32	Seis SSG	B <sub>1</sub>	29. 4.70	8,520	Miocene Gros Morne	Oil
	OPR - 9	I - 32	Seis SSG	B <sub>1</sub>	9. 6.70	12,023	Miocene Gros Morne	Gas and Condensate
	OPR - 10	H - 32	Seis SSG	C <sub>1</sub>	11. 6.70	8,510	Miocene Gros Morne	Abandoned dry
	OPR - 11	J - 32	Seis SSG	C <sub>1</sub>	30. 7.70	14,774	Gros Morne	Abandoned dry
	OPR - 12	H - 33	Seis SSG	C <sub>1</sub>	19.10.70	15,997	U. Miocene	Abandoned dry
	OPR - 13	H - 33	Seis SSG	A <sub>1</sub>	-	-	Gros Morne	Drilling at 7,865' at year end
	OPR - 14	K - 32	Seis SSG	A <sub>3</sub>	-	-	Gros Morne	Drilling at 1,200' at year end
	SG - 1	D - 27	Seis SSG	C <sub>1</sub>	31.7.70	14,384	Gros Morne	Abandoned dry
	EQB - 1	D - 40	Seis SSG	B <sub>3</sub>	9.11.70	16,030	Gros Morne	Gas and Condensate
	EQB - 2	D - 40	Seis SSG	B <sub>1</sub>	28.12.70	10,950	Gros Morne	Gas and Oil
T.N.A.	S 302	H - 9	Seis SSG	C <sub>1</sub>	21. 1.70	8,215	Top Cruse	Abandoned dry
	S 303	H - 5	Seis SSG	C <sub>1</sub>	1. 2.70	3,500	Top Cruse	Abandoned dry
T.T.P.C.L	Galeota A 1	H - 27	Seis SSG	A <sub>1</sub>	-	6,304	Gros Morne	Testing
T.T.I.	Columbus 1	C - 19	Seis SSG	A <sub>3</sub>	-	-	Miocene	Drilling at 14,805' at year end
	Bp 456	H - 16	Seis SSG	C <sub>1</sub>	22. 6.70	3,600	Top-Sds Herrera	Abandoned dry
	AS 124	I - 12	Seis SSG	C <sub>1</sub>	21.12.70	6,800	Underthrust L. Nariva Sds.	Abandoned dry
	AS 124X	I - 12	SSG	A <sub>1</sub>	-	-	L. Nariva Sds.	Drilling at 5,446' at year end
	ES 1	E - 10	SSSG.	C <sub>3</sub>	5. 8.70	9,437	Top L. Cruse	Abandoned dry
	GS 1	G - 24	SSSG.	C <sub>2c</sub>	15.10.70	6,019	Lower Gros Morne	Dry
	GY 606	G - 25	SSSG.	C <sub>3</sub>	6. 1.70	9,595	Lower Gros Morne	Dry
	GY 608	C - 24	SSSG.	C <sub>3</sub>	4. 2.70	6,475	Lizard Spring	Dry
GY 609	G - 23	SSSG.	C <sub>3</sub>	15.12.70	6,065	Lower Gros Morne	Dry	

geological controls. AS - 124 and AS - 124X were both programmed to evaluate the under-thrust lower Nariva sands on the South East Flank of the Brighton syncline. AS - 124 penetrated only a few feet of the lower Nariva Sands, it was thus uneconomical to complete this well. AS - 124X was still being drilled at the end of the year. GS - 1 was drilled to evaluate a Gros Morne prospect in the Guayaguayare Bay; the well was abandoned after the logging tools were stuck above the objective zones.

Columbus 1 was Texaco's only marine exploratory well and was still drilling at the end of the year. Of the remaining exploratory holes, three (3) were in the Guayaguayare area and one on the Barrackpore area. GY - 606 was located on the north flank of Galeota anticline; well developed but wet Gros Morne sands were obtained and the well failed to produce commercial quantities of oil. GY - 608 penetrated the objective Gros Morne sands on the Beach field anticline but unfortunately all the sands encountered were wet.

BP 456 was drilled to test the Shallow Herrera sands along the north flank of the Penal-Barrackpore-Madingo anticline. The objective sands were found to be wet.

Table III summarises exploratory drilling activity for 1970.

#### Development Drilling:

There were 114 development wells drilled and completed during 1970 12.3% of these wells being abandoned as dry holes. Table IV summarises the development drilling activity according to areas in Trinidad and Tobago.

TABLE IV  
Summary of Development Drilling in Trinidad and Tobago 1970

Area Number:	Producers Completed	Dry Holes Completed	Total Completed	Feet Drilled	Rigs Active 31.12.70
1	11	1	12	55201	1
2	7	2	9	41342	1
3	2	1	3	8312	—
4	49	3	52	170363	1
5	18	1	19	56730	1
6	3	1	4	14850	—
7	—	—	—	—	—
8	9	3	12	52327	1
9	—	—	—	—	—
10	1	1	2	10793	1
11	—	1	1	19381	1
12	—	—	—	9304	1
13	—	—	—	—	—
14	—	—	—	—	—
Totals:	100	14	114	438603	8

Fifty-two (52) development wells were drilled by Trinidad Tesoro Petroleum Co. Ltd. in Fyzabad, Palo Seco, Erin and Quinam areas. Most of their Palo Seco wells constituted part of an infill drilling programme for a 'huff and puff' or intermittent steam injection project. In September, Tesoro started the construction of their offshore seventeen (17) well platform for the development of their Galeota lease. The conductor piles were driven in and drilling commenced in late October.

Texaco Trinidad Inc. and Trinidad Northern Areas drilled and completed twenty-nine (29) and twenty-one (21) wells respectively. Shell Trinidad Ltd. after thirty-two (32) months of inactivity, renewed their drilling activity in February 1970, with two wells in Parryland and seven wells in the Grande Ravine area. The first Parryland well was abandoned dry but the remaining wells were completed as economic producers.

Amoco Trinidad Oil Co. started the erection of a 12 well drilling platform in the Offshore Point Radix area in September. At the end of the year the first well from this platform was being tested, while the second was still drilling.

**TABLE IVA**  
**Key to Area – Numbers used on Map (Fig. II) on Table IV and in Text**

Area Number	Description
1 . . . . .	Soldado, North Marine, Couva Marine
2 . . . . .	Point Ligoure, F.O.S. Area IV, Point Fortin West and Central, Guapo, Parrylands, Cruse
3 . . . . .	Brighton (Land and Marine), Vessigny, Merrimac, Rousillac
4 . . . . .	Palo Seco, Los Bajos, Erin
5 . . . . .	Forest Reserve, Fyzabad, Point Fortin East, New Dome, San Francique
6 . . . . .	Quarry, Coora, Quinam, Morne Diablo
7 . . . . .	Oropouche
8 . . . . .	Penal, Barrackpore, Wilson, Siparia, Mandingo
9 . . . . .	Moruga West, Rock Dome, Inniss, Trinity, Moruga North, Catshill, Balata, Bovallius
10 . . . . .	Guayaguayare, Lizard Springs, Moruga East
11 . . . . .	Palmiste, Galeota (East Coast)
12 . . . . .	South Marine (South Coast)
13 . . . . .	Tabaquite and Pointe-a-Pierre
14 . . . . .	Icacos

### PRODUCTION

Increased drilling and exploration activity did not have any significant effect on crude oil production during 1970. However, the precipitous decline (15%) which commenced during 1968 and continued throughout 1969 has been slowed down to 11%. The annual crude oil production was fifty-one (51) million barrels, representing a daily average production of 139,844 (Table 1).

Texaco's average daily production for 1970 was 44,256 bbl/day which is less than one half of their peak production in 1968. Their production decline rates in 1968 and 1969 were excessively high averaging thirty per cent (30%). In 1970, this rate was lowered to thirteen (13) per cent due to the favourable response to water and gas injection in the Guayaguayare Fields. Peak crude oil production in these fields averaged over 37,000 bbl/day in February 1968, after which the production declined at an alarming rate exceeding 45 per cent per year. Currently, the decline rate has been efficiently arrested and a substantial increase in this field's production is anticipated from water-flooding operations there. The other Texaco Fields have all maintained their production at fairly constant levels during the year.

Trinidad Northern Areas – the largest producer of crude oil in Trinidad averaged 66,044 bbl/day during the year under review thereby experiencing a decline of 4 per cent from the 1969 average daily crude oil production figure. This was the second successive year in which this field experienced a decline. Gravel-packing combined with hydraulic-pumping have been very successful in the East Soldado Field and there are plans to increase the use of this technique for artificial lift operations in other wells in this area.

The daily land production of Trinidad-Tesoro Petroleum Co. Ltd. in which the Government has a 50.1% share, averaged 19,667 bbl/day for 1970. This Company took over the operations of BP (Trinidad) Ltd. in Trinidad in July, 1969. It also acquired a one-third interest in the Soldado Marine operations; its other partners being Shell and Texaco.

During the first half of the year, production was fairly constant at about 19,300 bbl/day. The production has since risen to about 20,500 bbl/day due mainly to the infill drilling in their Palo Seco Field. Additional oil production anticipated from Trinidad-Tesoro's multi-well platform in the Galeota field will be delayed until the production and pipeline facilities are constructed in 1971.

Shell Trinidad Ltd. maintained an average daily land production of 8,287 bbl/day; Premier Consolidated Oilfields Ltd. and Trinidad Canadian Oils Ltd. had a daily average production of 544 bbl/day and 1,045 bbl/day respectively.

During 1970 only eight fields in Trinidad produced more than 1 million barrels. These fields are listed below in descending order of magnitude:—

<b>Field</b>	<b>Company</b>	<b>Production 1970 (Millions of bbls.)</b>
Soldado	Trinidad Northern Areas	23.9
Forest Reserve	Texaco Trinidad Inc.	4.3
Palo Seco	Texaco Trinidad Inc.	4.0
Guayaguayare	Texaco Trinidad Inc.	3.4
Palo Seco	Trinidad—Tesoro Petroleum Co. Ltd.	2.4
Fyzabad	Trinidad—Tesoro Petroleum Co. Ltd.	2.1
Brighton (Marine)	Texaco Trinidad Inc.	1.5
Penal	Shell Trinidad Ltd.	1.1

Figure IV illustrates graphically the contribution of new and recompleted wells to the country's total crude oil production and Table V gives a detailed comparison, by fields of production for 1969 and 1970.

By the end of the year, Texaco's Forest Reserve Field (discovered in 1913) had a cumulative crude oil production figure exceeding 219 million barrels, and the Trinidad Northern Areas Soldado Fields (discovered in 1954) had yielded 194 million barrels.

These two fields are considered "giants" by any standards. However, Soldado's annual oil production in 1970 was almost 24 million barrels compared with Forest Reserve's figure of four (4) million barrels. The indication, therefore, is that the Soldado Fields ultimate recovery will far exceed that of the Forest Reserve Field.

TABLE V  
Oil Production Trinidad and Tobago

Company Field	Area No.	Discovery Year	Total Wells Drilled	Age of Producing Formation	Annual Production		Cumulative Production Through December 1970 (thousands of barrels)
					1969 (bbls)	1970 (bbls)	
SHELL T'DAD LTD.							
Balata East & West	9	1952	48	Miocene	45,884	39,126	1,914
Catshill	9	1950	112	Miocene	553,586	513,355	18,791
Inniss	9	1956	33	"	134,382	104,366	5,276
Rock Dome	9	1962	3	"	—	—	16
Penal	8	1936	257	"	1,213,740	1,115,887	52,550
New Dome	5	1928	31	"	15,776	14,846	3,006
Point Fortin East	5	1929	116	"	476,051	474,009	18,655
San Francique	5	1929	27	"	22,086	20,442	5,750
Los Bajos	4	1918	29	"	—	—	546
Erin	4	1963	4	"	5,789	—	710
Area IV & Guapo	2	1963	156	"	210,018	169,106	32,196
Parrylands 2 & 3	2	1918	199	"	175,335)	321,622	32,848.
Parrylands 1,4&5	2	1913	144	"	184,924)		
Point Fortin Central	2	1916	94	"	130,877	92,654	11,570
Point Fortin West	2	1907	204	"	166,844	161,364	17,487
TOTAL			1,457		3,335,302	3,026,788	201,315
T.N.A.							
FOS-Ft	2	1954	23	Miocene	84,984	171,001	1,615
Soldado	1	1955	320	"	25,238,438	23,935,002	194,887
TOTAL			343		25,323,422	24,106,003	196,502
TEXACO T'DAD INC.							
Guayaguayare	10	1902	632	Miocene	5,118,325	3,444,114	63,538
Trinity	9	1956	93	"	476,320	395,674	12,088
Barrackpore	8	1911	282	"	560,015	792,978	20,950
Oropouche	8	1944	40	"	85,685	62,931	2,606
Morne Diablo/Quinam	6	1926	—	"	95,565	124,095	6,954
Forest Reserve	5	1913	1,783	"	5,080,340	4,366,508	219,266
Palo Seco	4	1929	—	"	5,978,042	4,092,881	70,790
Brighton	3	1908	588	"	3,043,514	2,264,086	61,411
Erin	4	1963	17	"	174,676	610,295	785
TOTAL			3,435		20,612,482	16,153,562	458,388
BELPETCO							
Couva Marine	1	1963	6	Miocene	8,792	—	178

**TABLE V**  
**Oil Production Trinidad and Tobago – Continued**

Company Field	Area No.	Discovery Year	Total Wells Drilled	Age of Producing Formation	Annual Production		Cumulative Production Through December 1970 (thousands of barrels)
					1969 (bbls)	1970 (bbls)	
<b>P.C.O.L.</b>							
Bovallius	9	1954	6	Miocene	—	—	189
Rock Dome	9	1955	11	"	—	—	134
Siparia	8	1957	5	"	28,305	17,139	720
Fyzabad	5	1918	252	"	72,739	67,374	12,438
San Francique	5	1929	72	"	62,612	54,465	2,599
Palo Seco	4	1915	83	"	10,564	9,575	1,550
Icacos	14	1965	13	"	61,504	37,540	320
Barrackpore	8	1970	3	"	—	12,343	12
<b>TOTAL</b>			<b>445</b>		<b>235,724</b>	<b>198,436</b>	<b>18,140</b>
<b>T.T.P.C.L.</b>							
Fyzabad	5	1920	815	Miocene	2,118,317	2,056,593	130,378
Quarry	6	1938		"	147,209	126,889	14,619
<b>TOTAL</b>			<b>815</b>		<b>2,265,526</b>	<b>2,183,481</b>	<b>144,997</b>
<b>K.T.O.</b>							
Guapo	2	1922	424	Miocene	671,160	649,386	32,794
<b>T.P.D.</b>							
Moruga East	10	1953	59	"	62,781	45,645	1,794
North	9	1956	18	"	26,447	18,980	816
West	9	1957	129	"	156,673	160,989	7,957
Coora/Quarry	6	1936	593	"	1,377,468	2,924,693	74,703
Palo Seco/Erin(McK.)	4	1926	899	"	2,689,021	2,686,632	64,302
North Marine	1	1959	15	"	182,157	142,542	1,029
<b>TOTAL</b>			<b>1,713</b>		<b>4,496,547</b>	<b>7,182,349</b>	<b>183,395</b>
<b>T.C.O.</b>							
Balata Central	9	1949	6	Miocene	7,873	7,062	371
Wilson	8	1936	74	"	311,215	245,727	18,049
Cruse	2	1913	150	"	146,864	122,722	24,917
Tabaquite	13	1911	218	"	3,586	4,244	1,337
<b>TOTAL</b>			<b>448</b>		<b>469,538</b>	<b>379,755</b>	<b>44,674</b>
					<b>57,418,493</b>	<b>51,046,893</b>	<b>1,245,413</b>



## SURVEY OF FLUID INJECTION OPERATIONS DURING 1970

### Gas Injection:

Total Gas injected during 1970 was reduced by approximately 25% from its previous year's level. A total of 18,298,121 were injected into the formation for all operations in 1970 as compared with 24,672,000 s.c.f. for 1969.

The total production from gas injection, however, seems to have maintained its steady decline. During 1970 gas injected yielded only 4,126,963 barrels as compared with 5,200,333 for 1969, a decline of some 22%. The most successful field utilising type of operation was the Texaco Forest Reserve field which produced as a result of this secondary recovery system 1,299,118 barrels or approximately 27% of that recovered from all gas recovery operations. But even this showed a decline since in 1969 gas injections yielded 2,923,196 barrels. Those figures should not be interpreted as any decline in operational efficiency but is correctly associated with field or project maturity.

### Water Injection:

Water injection in 1970 showed an impression increase after declining by over 200,000 barrels in 1969. The figure of 13,563,248 barrels for 1970 is due chiefly to Texaco's stepping up of its water injection programmes as several new units were included in water injection operations, for the first time so as to arrest decline in production. Out of a total of 13,563,248 barrels injected into the formation Texaco's operations accounted for 13,416,679. In 1969, this company had injected only 2,493,208 barrels into the formation. Its returns from water injection showed an increase over the previous year. In 1969 Texaco's water injections yielded 462,246 barrels compared with 1,848,845 barrels for 1970.

Shell increased its water injection operations by 10,000 barrels of water per day bringing it to 146,569 barrels. Its production from these operations continued to fall yielding only 26,349 barrels of oil.

Trinidad—Tesoro discontinued all of its water-injection operations.

### Steam Injection:

There has been an increase in the amount of steam injected into the formation as a form of well-bore stimulation. However, as Table IX indicates, there was a decline of crude produced from these operations in this way for while in 1968 a total injection of 989,773 barrels of steam yielded, 878,734 barrels of oil in 1970, a total injection of 1,254,454 barrels of steam only yielded a return of 863,174 barrels of crude. Thus the increase did not help production very much.

Total oil recovered from wells under the influence of fluid injection projects rose from 11.7% in 1969 to 13.8% during the year 1970. This factor alone reflects the increasingly important role that fluid-injection operations (including pressure-maintenance, secondary oil recovery, natural gas and water as the injection media and steam-injection and other thermal oil recovery mechanisms), are playing in maintaining the level of our crude oil production rates in semi-depleted areas.

Summaries of Trinidad and Tobago's Fluid Injection and Production Statistics are included for the period 1966–1970 in Table VI. Statistics by Company for each type of fluid injection are presented in Table VII. Water Injection statistics are summarized in Table VIII; steam injection are illustrated by project in Table IX and gas injection data by Areas is shown in Table X.

**TABLE VI**  
**Summary of Fluid Injection Operations in Trinidad and Tobago for Period 1966 – 1970**

Year	Projects			Injection Statistics				Crude Oil Production Statistics				
	No. of Projects in Operation at End of Year			Gas (mmcf)	Injection as a % of Trinidad's total gas production	Water (bbls.)	Steam (bbls.)	Total Oil Recovered from Wells under Project Influence in Bbls.				Oil expressed as a % of Trinidad's total oil production
	Gas	Water	Steam					Gas Injection Projects	Water Injection Projects	Steam Injection Projects	All Projects	
1966	30	12	14	19,841	16.7	3,625,743	1,353,550	4,729,544	1,099,788	822,889	6,652,221	12.0
1967	27	4	10	22,633	16.1	2,906,151	1,321,088	5,188,386	466,180	969,395	6,623,961	10.2
1968	31	5	11	21,323	14.1	2,926,657	1,090,699	5,402,241	396,823	969,741	6,768,805	10.1
1969	31	7	12	24,672	17.9	2,741,938	989,773	5,200,333	661,768	878,734	6,740,835	11.7
1970	32	8	6	18,293	15.1	13,563,248	1,254,454	4,126,963	2,071,061	863,174	7,061,198	13.8

TABLE VII

GAS INJECTION: Fluid – Injection Operations - Year 1970

Name of Company	No. of Active Projects	Gas Injected (MSCF)	Oil Produced (bbls.)	Water Produced (bbls.)	Gas Produced (MSCF)	G.O.R. SCF/bbl.
TEXACO	11	13,200,578	2,151,740	473,498	13,688,415	6,362
T.T.P.C.L.	26	3,625,414	671,036	64,444	4,364,271	6,504
S.T.L.	—	—	—	—	—	—
T.C.O.	—	—	—	—	—	—
TRIMAR	1	1,467,129	1,304,187	776	3,549,198	2,721
TOTAL	38	18,293,121	4,126,963	538,718	21,601,814	5,234

WATER INJECTION:

Name of Company	No. of Active Projects	Water Injected (bbls.)	Oil Produced (bbls.)	Water Produced (bbls.)	Gas Produced (MSCF)	% Water in total Production
TEXACO	5	13,416,679	1,848,845	1,623,357	309,486	46.8
T.T.P.C.L.	3	—	195,867	174,429	216,083	47.1
S.T.L.	1	146,569	26,349	2,635	27,908	9.1
TOTAL	9	13,563,248	2,071,061	1,800,421	553,477	46.5

STEAM INJECTION:

Name of Company	No. of Active Projects	Steam Injected	Oil Produced (bbls.)	Water Produced (bbls.)	Gas Produced (MSCF)	% Water in total Production
TEXACO	9	1,153,778	454,912	331,581	187,754	42.2
S.T.L.	—	—	—	—	—	—
T.T.P.C.L.	2	100,676	399,170	88,841	108,118	18.2
P.C.O.L.	1	—	9,092	17,009	—	65.2
TOTAL	12	1,254,454	863,174	437,431	295,872	33.6

**TABLE VIII**  
Water Injection Summary by Projects-Year 1970

Company	Field	Project	Water Injected (Bbls)	Oil Produced (Bbls)	Water Produced (Bbls)	Gas Produced (Mscf)	Percentage Water
Texaco	Forest Reserve	F/R Zone 9	602,634	150,513	430,905	44,191	74.1
		F/S Zone 4	423,440	59,412	54,322	—	47.8
	Guayaguayare	Gros Morne Zone 4	4,953,537	903,349	677,715	—	42.9
		Gros Morne Zones 4 & 5	3,288,933	628,905	403,995	—	39.1
	Brighton	Lower Nariva As.10 Fault Block	4,208,135	106,666	56,420	265,295	34.6
Texaco	All Fields	—	13,416,679	1,848,845	1,623,357	309,486	46.8
T'dad-Tesoro	Fyzabad	FM/UF/610/1	—	17,002	5,051	13,165	22.9
		FS/LC/539/1	—	175,697	166,824	198,939	48.9
		FM/UF/200/1	—	5,168	2,554	3,979	33.1
T'dad-Tesoro	All Fields	—	—	195,867	174,429	216,083	47.1
S.T.L.	Catshill	Co.30.SD.S	146,569	26,349	2,635	27,908	9.1
All Companies	All Fields	—	13,563,248	2,071,061	1,800,421	553,477	46.5

**TABLE IX**  
Steam Injection Summary by Projects-Year 1970

Company	Field	Project	Steam Injected (Bbls)	Oil Produced (Bbls)	Water Produced (Bbls)	Gas Produced (Mscf)	Percentage Water
Texaco	Forest Reserve	I	—	21,315	15,999	8,979	42.9
		IIA	—	29,145	19,093	12,049	39.6
		IIB	—	10,189	13,590	4,232	57.2
		III	1,101,378	319,590	246,202	132,862	43.5
		IV	52,400	34,125	16,845	14,541	33.0
		V	—	21,133	17,815	8,802	45.7
		VI	—	8,242	135	3,283	1.6
		U.U.C.	—	113	3	56	2.6
	Brighton	Vessigny	—	11,060	1,899	2,950	14.7
Texaco	All Fields	—	1,153,778	454,912	331,581	187,754	42.2
T'dad-Tesoro	Palo Seco	L.M.L.E./UF	71,393	300,446	60,585	26,592	16.8
	Guapo	U.C.	29,283	98,724	28,256	81,526	22.3
T'dad-Tesoro	All Fields	—	100,675	399,170	88,841	108,118	18.2
P.C.O.L.	Fyzabad	Zenith	—	9,092	17,009	—	65.2
All Companies	All Fields	—	1,254,454	863,174	437,431	295,872	33.6

**TABLE X**  
**Gas Injection Summary by Areas-Year 1970**

Company	Field	Gas Injected (Mscf)	Oil Produced (Bbls)	Water Produced (Bbls)	Gas Produced (Mscf)	Gas Oil Ratio G.O.R.
Texaco	Forest Reserve	8,034,364	1,299,118	441,343	8,325,486	6,339
	Brighton	646,680	55,620	7,275	191,255	3,439
	Guayaguayare	4,519,534	687,078	24,880	5,171,674	7,527
Texaco	All Fields	13,200,578	2,151,740	473,498	13,688,415	6,362
T'dad-Tesoro	Coora	826,237	151,593	21,083	1,131,634	7,431
	Quarry	657,642	130,285	6,008	740,461	5,683
	Moruga West	—	12,944	5,665	95,982	7,415
	Palo Seco	—	25,183	278	138,226	5,489
	Fyzabad	2,141,535	351,031	31,410	2,257,968	6,432
T'dad. Tesoro	All Fields	3,625,414	671,036	64,444	4,364,271	6,504
T.N.A.	Soldado	1,467,129	1,304,187	776	3,549,128	2,721
All Companies	All Fields	18,293,121	4,126,963	538,718	21,601,814	5,234

#### NATURAL GAS PRODUCTION AND UTILIZATION

The bulk of this country's Natural Gas Production is closely associated with the crude oil production. Thus the sharp decline in crude oil production is immediately reflected in the falling figures for Natural Gas.

Natural Gas Production for the year was 121,059 million s.c.f. which was a decline of approximately 11.5% below the previous year.

The drop in natural gas production can be accounted for by production declines in the following Texaco areas; Forest Reserve, Brighton and Guayaguayare and as well as the marked decline in Trinidad Tesoro's Production.

Complete utilisation of natural gas produced in Trinidad and Tobago did not show any marked increase as was the case in the previous year which was due to an increase in gas injection operation and also an increased refinery usage.

Natural gas wasted during the year was 20.7% as opposed to 31.6% for the previous year. This was due to the fact that a greater amount of gas was further utilised after its pneumatic energy was used rather than just vented or flared as was the case in the previous year.

The trend of gas production over the past five (5) years is given in the following table.

**TABLE XI**  
**Annual Statistics for Natural Gas Production & Utilization 1966 – 1970**

	1966		1967		1968		1969		1970	
	Millions of S.C.F.*	%	Millions of S.C.F.*	%	Millions of S.C.F.*	%	Millions of S.C.F.*	%	Millions of S.C.F.*	%
PRODUCTION	118,927	100.0	140,338	100.0	151,445	100.0	137,499	100.0	121,060	100.0
G.O.R. (S.C.F./bbl)	2,138		2,159		2,264		2,394		2,372	
A. USED AS FUEL:										
In Refineries	25,257	21.2	28,304	20.2	29,257	19.3	29,383	21.4	27,403	22.6
In Fields	8,208	6.9	7,783	5.6	7,848	5.2	8,313	6.0	8,785	7.3
Other Industries	15,227	12.8	17,759	12.7	19,294	12.8	20,652	15.0	20,302	16.8
SUB TOTAL	48,692	40.9	53,846	38.5	56,399	37.3	68,348	42.4	56,490	46.7
B. OTHER COMPLETE UTILIZATION:										
Used as Process Gas	6,714	5.7	9,309	6.6	10,603	7.0	10,803	7.9	10,054	8.3
Injected into Formation	19,841	16.7	22,625	16.1	21,323	14.1	24,727	18.0	19,017	15.7
Converted into C.H.P.S.	219	0.2	204	0.1	173	0.1	158	0.1	143	0.1
SUB TOTAL	26,774	22.6	32,138	22.8	32,099	21.2	35,688	26.6	29,214	24.1
C. VENTED:										
After use of Pneumatic Energy	23,224	19.5	30,877	22.0	31,257	20.6	19,748	14.4	13,253	10.9
Without Use	20,237	17.0	23,478	16.7	31,690	20.9	23,715	17.2	22,103	18.3
SUB TOTAL	43,461	36.5	54,355	38.7	62,947	41.5	43,463	31.6	35,356	29.2

S.C.F.\* – Standard Cubic Feet.

% – percent of total Natural Gas Produced.



### REFINING AND PETROCHEMICAL MANUFACTURE

The refining sector continues to dominate the local Petroleum Industry. There has been no expansion in this sector during the past year.

The refinery throughput of 154,860,261 barrels of crude oil processed at a daily average of approximately 422,746 barrels showed no major increase over the 1969 figure of 154,076,622 barrels.

Total imports of crude oil were 113,264,796 barrels or approximately 73.5% of total refinery throughput. The import of crude oil from Venezuela the largest supplier was 52,127,926 barrels or 46% of total imports followed by Saudi Arabia with 21,117,062 representing 18.5% of total imports.

Primary refined products made the biggest gains during the year with Fuel Oil increasing by 3,068,344 barrels to a production of 91,353,938 barrels which amounted to approximately 60% of total production: Aviation turbine fuel continued to fall so this year it showed a total production of 12,449,562 barrels as compared with 15,105,006 barrels for 1969, while Kerosine showed a formidable increase rising from 2,514,376 barrels in 1969 to 6,436,237 barrels in 1970.

In respect of other refined products and petro-chemicals; there were only slight variations both ways when compared with the 1969 production figures. These comparative production figures could be seen in the following table for the years 1969 and 1970. Annual Production of normal paraffins and toluenes decreased by approximately 75,000 barrels and 149,000 barrels respectively. In the case of the aromatics the drop in production was due to problems on the plant, whereas in the case of normal paraffins loss of sieve activity was the cause.

**Production – and – Exports of Important Petrochemical Intermediates**  
**Trinidad and Tobago – 1970**  
*(Quantities in Barrels)*

Petrochemical Intermediates	Year 1970		Year 1969	
	Production	Exports	Production	Exports
Normal Paraffins	697,869	568,144	722,060	771,548
Di-isobutylene	52,943	50,428	45,217	42,387
Nonene	24,744	26,624*	24,011	26,386*
Tetramer	63,699	71,307*	51,268	59,794*
Benzene	106,822	89,084	220,955	237,816*
Toluene	232,953	240,078*	381,734	386,634*
Zylene	21,733	20,922	26,405	24,672
Cyclohexene	141,306	164,539*	174,308	141,830
Unrefined Napthenic Acids	25,565	31,072*	28,485	26,688

\* Excess of Exports over production made up from stocks.

As in the past the major portion of the Refinery Products was exported to world markets as can be seen in Appendix V (1969), and (1970.)

## MOVEMENT OF CRUDE OIL AND PRODUCTS

The Overall picture of Crude Oil movement and product disposal is summarised in the following Crude Oil Balance Table. For details see Appendix V.

CRUDE OIL BALANCE							
AVAILABILITY			MILLION BBLs.			DISPOSAL MILLION BBLs.	
Stock at 1st January	...	...	...	...	3.2	Exports	8.7
Production	...	...	...	...	51.2	Delivered to Refinery	154.9
Less Loss	...	...	...	...	1.2		
Imports	...	...	...	...	113.3	Stock at 31st December	2.9
					<u>166.5</u>		<u>166.5</u>
REFINED PRODUCTS BALANCE							
Stock at 1st January	...	...	...	...	6.1	Shipments	136.0
Imports	...	...	...	...	2.2	Bunkers	10.3
						Local Consumption	3.6
Crude Delivered	...	..	...	...	154.9		
Refinery Gas & Loss	...	..	...	...	5.7		
					<u>149.2</u>		
Products obtained	..	...	...	...	149.2	Stock on 31st December	7.6
					<u>157.5</u>		<u>157.5</u>

The volume of excisable products amounted to 1,804,667 barrels. The excisable sales of gasoline amounted to 1,353,225 barrels, an increase of 28.2% compared to 1969. The excisable duty on these sales was \$11,807,909.89. The excise-tax on gasoline being 27 cents for premium and 18 cents for regular.

Sales of bottled propane showed an increase of 21.4% over the 1969 figure amounting to 28,962,936 lbs. on which excise duty at 2 cents per lb was paid.

Details of petroleum excisable products are listed hereunder:-

Premium Gas bbls.	Regular Gas bbls.	Gas/Diesel bbls.	Propane (lbs.)
488,861	864,364	451,442	28,962,936

#### NITROGENOUS FERTILIZERS

Average ammonia production in Trinidad and Tobago was approximately 1,288 short tons per day, a total of 470,538 short tons being produced for the year. This showed a decrease below that of the previous year which was 527,232 short tons. Consequently, both Ammonium Sulphate and Urea showed decreases and totalled 60,572 and 63,934 short tons respectively as compared with 84,376 and 76,162 short tons respectively for 1969.

A total volume of 17,737 m.s.c.f. of Natural Gas was used in the ammonia and nitrogenous fertilizer industry during 1970. This reflected 7.63% below the quantity used in 1969; of this quantity 10,054 m.s.c.f. were actually used in the process, the remainder being consumed mainly as fuel.

#### MARKETING

##### PETROL STATIONS: SALES AND MARKETING POSITION 1970

There were 218 Petrol Filling Stations in operation in Trinidad and Tobago at the end of 1970. Statistics on sales and retail outlets are distributed among the four Marketing Companies as follows:-

	TEXACO	SHELL	ESSO	B. P.	TOTAL
No of Stations	76	62	56	24	218
Volume – (Mogas I.G.)	16,286,752	11,744,433	9,481,190	754,412	45,056,497
Average per Station	214,299	189,426	169,306	314,338	
Market – % of total Sales	36.0	26.3	21.0	16.7	100.0
% – of Stations	34.6	29.1	24.4	10.9	100.0

The total throughput was 6.07% greater than the 1969 total of 42,474,394 I.G.

For the five (5) year period 1966 to 1970, gallonage rose from 37,599,834 to 45,056,497 giving an average annual growth rate of 5%.

YEAR	GALLONAGE
1966	37,599,834
1967	39,613,582
1968	40,934,685
1969	42,474,394
1970	45,056,497

Activities at Petrol Stations were for the most part confined to the maintenance of underground storage facilities, alteration of dispensing units from single pumps to duo-pumps and modernisation of station buildings.

One new Station was completed on the Piarco Road and one re-built at Biche.

#### L.P.G. (Liquefied Petroleum Gas)

The use of L.P.G. has been increasing over the years and is gradually displacing kerosine as the "poor man's" fuel in the home.

Production on L.P.G. therefore has been increasing to meet public demand both for domestic and industrial uses.

In 1970 production was 169,501 barrels, or 28,476,168 lbs., an increase of 16.43% above the 1969 figure of 145,587 barrels or 24,458,616 lbs.

Texaco Trinidad Ltd. and Shell Trinidad Ltd. are the only two local marketers of this product. However, Texaco Trinidad Inc., is the sole manufacturer and ships L.P.G. in bulk to Carifta and other Islands. Shell Trinidad Ltd. also shares Carifta Market and is currently in the process of installing L.P.G. manufacturing, storing and shipping facilities.

The main Local Distributors are Huggins & Company, Harriman & Company and Rahamut Ltd.

Sales volumes for Shell Trinidad Ltd. and Texaco Trinidad Ltd. for the years 1969 and 1970 are distributed as follows:-

YEAR	TEXACO	SHELL
1969	81,368 bbls	64,219 bbls.
1970	101,991 "	67,510 "

#### SUMMARY OF ACCIDENTS OCCURING IN THE PETROLEUM INDUSTRY DURING 1970

During 1970, the total number of accidents reported in the fields was 116. This figure represents a decrease of about 30.5% from the total number of accidents reported in 1969.

About 45% of the accidents were classified as serious and consisted mainly of: eye injuries; injuries to head, chest and back, caused by either falls or falling objects; severe strains, caused by the lifting of heavy objects; and the amputation or fracture of limbs, fingers and toes. The other 55% were classified minor accidents, and included typical routine accidents such as squeezed fingers or limbs; minor bruises and cuts to body; strained muscles; and slight injuries resulting from falls.

There were several accidents which although not strictly falling under the jurisdiction of the Ministry of Petroleum and Mines, were brought to its attention and investigated by the Ministry. Among them were three (3) fatal accidents. One was a traffic accident occurring near Palo Seco Well 267, where a truck ran off the road, and caught fire. Another occurred at Well 274 Soldado, when the Captain of the launch 'Tarpon' was pinned by a launch and fell into the sea and drowned. The third occurred near Well OPR 13, where an engineer was struck on the head by a block and sustained a fractured skull.

A Summary of Accident Statistics is given in Table XII.

**TABLE XII**  
**Accident Statistics – 1970**

Company	Field	Total Acci- dents	Fata- lities	Serious				Minor				
				D	P	E	O	D	P	E	O	
Trimar Limited	All	2							2			
T'dad-Tesoro Petroleum Co.Ltd.	All	32			16	2			12		2	
Premier Consolidated Oilfields Ltd.	All	2							2			
Trinidad Canadian Oils Limited	All	2			1				1			
Shell T'dad Ltd.	All	1			1							
Texaco Trinidad Inc.	Forest Reserve	21				7			2	12		
	Barrackpore	4		2					1	1		
	Guayaguayare	21		6	6			4	5			
	Palo Seco	15		1	4				10			
	Brighton	10		1	5			2	2			
	Erin	5							5			
	Quinam	1								1		
	Total – Texaco	77		10	22				14	31		
Industry Totals		116		10	40	2		14	48		2	

D – Drilling

P – Production

E – Engineering

O – Others

## ROYALTY ASSESSMENT

Appendix VIII presents a summary of Crude Oil assessed for Crown Royalty with prices and analyses for the year under review for the half-yearly periods ending 30th June and 31st December.

Appendix IX presents a summary of the Royalty assessed on Crude Oil, Natural Gasoline and Natural Gas produced on Crown Oil Mining Leases for each of the half-yearly periods during 1968, 1969 and 1970.

Appendix X summarises the quantities of Natural Asphalt extracted from the Pitch Lake and the quantities of derived products which were exported and consumed locally during 1968, 1969 and 1970.

## LEASES AND LICENCES

During 1970, Texaco acquired an additional amount of 176,752 acres under licence. Shell surrendered 26,501 acres, while P.C.O.L. acquired an additional 35 acres under licence.

Total oilrights under licence increased from 2,531,434 to 4,275,912 at the end of 1970. This increase was due mainly to four new Oil Companies acquiring exploration licences on the North Coast.

The following is an outline of the leasing situation in the Territory as at 31st December, 1970.

CROWN OILRIGHTS	A	R	P
Crown Leases – Crown Surface	224,483	0	39
Crown Leases – Private Surface	49,929	1	29
Exploration and Production Licences (Public Petroleum Rights)	3,208,970	0	0
Marine Licences	695,284	0	0
Total Crown Oilrights	4,178,666	2	28
PRIVATE OILRIGHTS			
Private Leases	97,245	3	30
<b>TOTAL ACREAGE OF ALL LANDS UNDER LEASE</b>	<b>4,275,912</b>	<b>2</b>	<b>18</b>

A detailed survey of Crown and Private Leases and Licences is set out on a Company Basis in Table XIII.



**TABLE XIII**  
Oilrights Under Lease and Licence as at 31st December, 1970 in Trinidad and Tobago.

Company	CROWN																					Private Oilrights Land			Total Crown & Private			
	Land Leases									Submarine Licences																		
	Crown			Alienated (Surface Private) Crown Oil			Total			High Seas			Territorial Waters			Exploration Licences			Total			A	R	P	A	R	P	
	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	A	R	P	
Trinidad Northern Areas (T.N.A.)	32	3	33	—	—	—	32	3	33	88,486	0	00	95,161	0	00	—	—	—	183,647	0	00	—	—	—	183,679	3	33	
Texaco Trinidad Inc. (T.T.I.)	127,482	3	35	33,495	3	32	160,978	3	27	252,900	0	00	158,906	0	00	—	—	—	411,806	0	00	81,251	2	09	654,035	1	36	
Trinidad—Tesoro Petroleum Co. Ltd. (T.T.P.C.L.)	15,660	2	01	8,533	0	20	24,193	2	21	57,000	0	00	975	0	00	—	—	—	57,975	0	00	5,074	1	15	87,242	3	36	
Shell Trinidad Ltd. (S.T.L.)	63,591	2	10	5,239	2	24	68,831	0	34	—	—	—	—	—	—	—	—	—	—	—	—	988	0	08	69,819	1	02	
Premier Consolidated Oilfields Ltd. (P.C.O.L.)	10,718	2	09	2,640	1	13	13,358	3	22	—	—	—	—	—	—	—	—	—	—	—	—	5,766	1	38	19,125	1	20	
Trinidad Canadian Oilfields Ltd. (T.C.O.)	6,996	2	31	—	—	—	6,996	2	31	—	—	—	—	—	—	—	—	—	—	—	—	35	2	00	7,032	0	31	
Estate of Timothy Roodal	—	—	—	9	2	12	9	2	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	2	12
Dominion Oil Ltd. (D.O.L.)	—	—	—	10	3	08	10	3	08	—	—	—	41,856	0	00	78,899	0	00	120,755	0	00	4,130	0	00	124,895	3	08	
Amoco Trinidad Oil Co.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,456,755	0	00	1,456,755	0	00	—	—	—	1,456,755	0	00	
BELPECTO	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	103,035	0	00	103,035	0	00	—	—	—	103,035	0	00	
Phillips Petroleum Caribbean Ltd.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	414,600	0	00	414,600	0	00	—	—	—	414,600	0	00	
Dexinex & A.G.I.P.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	414,600	0	00	414,600	0	00	—	—	—	414,600	0	00	
Occidental of Trinidad Inc.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	331,680	0	00	331,680	0	00	—	—	—	331,680	0	00	
Amerada Hess Corp. of Trinidad and Tobago 565 Corp.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	248,760	0	00	248,760	0	00	—	—	—	248,760	0	00	
Oceanic Exploration & Dev. Corp., Santa Fe Int. Corp., Terra T'dad and Tobago Ltd. Inc.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	160,640	0	00	160,640	0	00	—	—	—	160,640	0	00	
<b>TOTAL</b>	<b>224,483</b>	<b>0</b>	<b>39</b>	<b>49,929</b>	<b>1</b>	<b>29</b>	<b>274,412</b>	<b>2</b>	<b>28</b>	<b>398,386</b>	<b>0</b>	<b>00</b>	<b>296,898</b>	<b>0</b>	<b>00</b>	<b>3,208,970</b>	<b>0</b>	<b>00</b>	<b>3,904,254</b>	<b>0</b>	<b>00</b>	<b>97,245</b>	<b>3</b>	<b>30</b>	<b>4,275,912</b>	<b>2</b>	<b>18</b>	

Explanations: A — acres, R — roods, P — perches.

## LEGAL DEVELOPMENTS IN 1970

**Legislation:**

The Petroleum Act which came into force on December 30th 1969 and the Petroleum Regulations 1970 made under S.29 of the Act and enacted in January 1970, make provisions for (*inter alia*) the granting of licences for carrying out petroleum operations by the Minister of Petroleum and Mines.

Only persons who have obtained a licence for petroleum operations as defined in the Act may engage in those operations and then only in respect of the operation specified in the Licence.

Licences from the Minister of Petroleum and Mines are required for Exploration and Production of public petroleum rights i.e. rights to petroleum in Crown Lands and submarine areas. An exploration Licence to explore for a period of six (6) years initially and is non-exclusive with respect to the Licenced Area, i.e. another person may also be so licenced. A licence to explore and produce gives to the Licensee the exclusive right to search for and get petroleum in the Licenced Area but confers no ownership of the petroleum in the ground or rights in the land within a Licensed Area. If the Licensee requires the exclusive use of land for the purpose of his operations, he must obtain a lease either from the Crown or the Owner of the land at the surface rent stipulated therein.

Licences from the Minister are also required for exploration and production of private petroleum rights (i.e. rights belonging to private persons,) refining, liquefaction of natural gas, transportation, marketing, construction of pipelines extending outside a licensed Area, petrochemical operations and all other petroleum operations within the definition in the Act.

Grants made by the Crown after the 30th January 1902 reserved the petroleum rights to the Crown.

A fee of \$300 is payable on application for a new licence under the law and a licence fee of \$2,000 is payable on issue of a licence.

The Minister of Petroleum and Mines is charged subject to the directions of the Cabinet, with the general administration of the Act.

In order to obtain any facility, right or privilege (called ancillary rights) for the proper and efficient carrying out of petroleum operations with respect to the petroleum rights (whether public or private) conferred in a licence, a person who holds a licence must acquire these rights, by negotiation with the Minister or the person entitled to grant those rights. Where this is unreasonably refused by private persons a licensee may apply to the Minister who, if he considers it expedient in the public interest, may grant the right by way of making a compulsory purchase Order.

Non-resident companies are required by certain provisions of the Act to establish an office or place of business in Trinidad and Tobago and to appoint an individual resident here to conduct their affairs.

The Governor-General is empowered to make regulations covering a wide range of matters many of which were formerly contained in the enactments repealed by the Act.

The Minister is empowered by the Act and Regulations to make certain Rules and Orders as to matters concerning which the Act and Regulations cannot suitably provide or as to administrative directions.

The Schedule to the Act amended the Income Tax (In Aid of Industry) Ordinance and the Finance Act, 1966:—

- (a) to provide a land production allowance in respect of approved petroleum production, e.g. deep drilling in proven areas; or virgin areas on land;
- (b) to reduce by one-half, the submarine well allowance in respect of Licences granted prior to 1961;
- (c) to allow in respect of Licences granted in submarine Areas between 1961 and 1969, a submarine production allowance equal to the royalty paid on a portion of the production in a Licensed Area for a period of six years from the date of commercial production on a de-escalating scale.
- (d) to enable the Board of Inland Revenue for the purpose of income tax assessment after consultation with the Minister of Petroleum and Mines to fix the price of petroleum and petroleum products and natural gas in accordance with certain criteria specified in the amendments.

The Act also makes provision (*inter alia*) for, the conversion of licences granted prior to 1969 (S. 37) the financial provisions of the Licensee to be stipulated in the Licence, the delivery of facilities upon determination of Licence and all those matters to be dealt with in the Regulations.

The Regulations make provision for (*inter alia*) the licensing of petroleum operations, form of applications for licences, pipelines, duration of licences, assignments, general and technical obligations of licensees, financial and work obligations, information, royalty, and determination of licences.

Regulations are yet to be made to cover a wide range of matters inadequately covered in the present regulations, which are slanted mainly towards exploration and production of petroleum.

#### Exemption from Import Duties:

A Resolution passed by the House of Representatives in March 1970 exempted from import duties all petroleum equipment material and supplies imported for use in offshore oil exploration operations.

#### LICENCES

A number of Licences were granted off the North Coast of Trinidad under the new petroleum legislation.

The area was first opened to competitive bidding and a total of 26 companies paid the registration fee of U.S. \$25,000 which entitled them to bid on the basis of the geophysical data which was made available to them on registration.

A total of sixteen (16) companies, (fourteen American and two European) submitted bids for licences to explore and produce petroleum in a 3,000 square mile area between Trinidad and Tobago.

Bids were then analysed on the following criteria:—

- (a) Work programme proposed by applicant and availability of markets for production;
- (b) Bonus offered;
- (c) Proposal for Government's participation;
- (d) Other offers to the benefit of the people of Trinidad and Tobago.

After a consideration of all the Bids, Exploration and Production (Public Petroleum Rights) Licences were granted over the Submarine Area off the North Coast of Trinidad and Tobago as follows:—

- (a) On June 29th 1970 three (3) Licences were granted to a consortium comprising Deutsche Erdolversorgungsgesellschaft mbh "DEMINEX" and AGIP SpA over a total area of approximately 414,600 acres.
- (b) On July 10, 1970, two licences were granted to a consortium comprising Phillips Petroleum Caribbean Ltd., Cleary Production Corporation and Apco Oil Corporation over a total area of approximately 414,600 acres.
- (c) On July 15, 1970 two licences were granted to Occidental of Trinidad Inc. over a total area of approximately 331,680 acres.
- (d) On August 10, 1970 one Licence was granted to Amerada Hess Corporation of Trinidad and Tobago and 565 Corporation over a total area of approximately 248,760 acres.
- (e) On October 15, 1970 one licence was granted to a consortium comprising of Oceanic Exploration and Development Corporation, Santa Fe International Corporation and Terra Trinidad and Tobago Ltd. Inc. over an area of approximately 160,640 acres.

#### Terms and Conditions:

Licences were granted for a period of six years, subject to renewal for a term of twenty five years with respect to (a maximum of one) half the original Licensed Area, and subject to a further renewal for a term of five years on terms and conditions to be stipulated in the light of circumstances then prevailing; further renewals for five-year periods may be given on the same terms and conditions provided for the first five year renewal.

The Licensees are under obligation to *surrender* half the Licensed Area by the end of the sixth year in the shape and size stipulated in the Regulations.

The Licensees are committed to spend on exploration operations during the first three years a minimum sum annually as agreed to and stipulated in the Licence and referred to as the Expenditure Obligation.

Licensees are also committed to a *work programme* undertaken and stipulated in the Licence and aimed at compelling the Licensee to carry out his operations diligently.

Failure to fulfil the work and expenditure obligation can result in forfeiture of the Licence.

Minimum Payments in respect of each acre held by the Licensee are payable at the escalating rate specified in the Licence i.e. U.S. \$.20 in the first year to U.S. \$5.00 in the 17th year.

Royalty for this area is payable at the rate of 12½% on the net petroleum won and saved in the Licensed Area and assessed in the manner set out in the Regulations.

Geological, geophysical and all interpretative data submitted by the Licensee to the Minister are to be kept confidential for a period of three years if the Licensee can show justification therefore.

There is provision for unit development, where the strata in the Licensed Area forms part of a single petroleum reservoir in respect of which other Licences are in force.

In the conduct of operations, Licensees are required to have regard to public interest and to promote the training and employment of nationals.

#### South Coast Marine Acreage:

On August 5, 1970 one Exploration and Production (Public Petroleum Rights) Licence was granted to Texaco Trinidad Inc. to carry on exploration and production operations in the Submarine area lying to the South of Trinidad, over an area of approximately 175,900 acres. The terms and conditions of this licence were similar to the terms and conditions of the North Coast Licences.

#### Conversion of Exploration and Exploration and Production Licences:

Conversion of these Licence can be divided into two categories as follows:—

- (a) Licences granted prior to 1960 which are yet to be converted;
- (b) Licences granted between 1961 and 1969 now under conversion.

On July 17th 1970 the Amoco Trinidad Oil Company converted two Exploration Licences granted in 1961 and 1968 respectively to Exploration Licences under S. 37 of the Petroleum Act 1969. The licences were granted over two areas comprising 944,656 acres and 512,100 acres respectively.

The company was allowed to retain certain basic terms (e.g. duration, financial obligation etc.) but conformed to the new law in all other respects.

As a result of the discovery of commercial production in one of the Licensed Areas, on October 5, 1970 fourteen Exploration and Production (Public Petroleum Rights) Licences comprising together approximately 87,761 acres, were granted to the Company to carry out exploration and production operations.

The terms and conditions for licences granted during the period 1960 - 1969 vary in some respects from those contained in pre '60 Licences.

#### Applications:

There has been a flood of applications under the new legislation for the various licences required thereby, and the Ministry is at present dealing with all such applications.

There have been applications for licences to construct a number of Pipelines.

Amoco proposes to lay a trunk pipeline for the transportation of crude oil from their Licensed Area off the East Coast to an on-shore export facility.

Texaco has also applied for licences to construct three pipelines, as follows:

- (a) 1 trunk pipeline, 12,550 feet long and 12" in diameter for transporting gas.
- (b) 1 trunk pipeline 18,150' in length, 6" in diameter for transportation of Hydrogen from Federation Chemicals to Texaco's desulphurization plant now being constructed.
- (c) 16" Hydrogen line.

#### STAFF:

1970 was considered a very dynamic year for the Ministry of Petroleum and Mines and the International Oil Community. There were several resignations as well as new additions.

#### Resignations and Transfers:—

Mr Eugene Bertrand, Petroleum Engineer who had been attached to the Ministry since 1959 resigned in January to take up a Senior Managerial appointment with West Indian Oil Company of Antigua. Later in the year Mr. John O'Halloran who served as Minister since the inception of the Ministry resigned. He was subsequently replaced by Senator O.R. Padmore. The Permanent Secretary, Mr. Roderick Thomas who entered the Ministry in 1961 and was appointed to Permanent Secretary, in 1967 tendered his resignation to take effect from 1st January 1971. Mr. Ovid Fernandes who entered the service as a Petroleum Engineer in 1956 is now acting in the vacancy. After obtaining a 1st Class Hons. degree in Petroleum Engineering from Birmingham U.K. in 1955, he obtained the M.Sc. at Penn. State University in 1961. Mr. John L. Nunez has been promoted to the position of Acting Permanent Secretary, Ministry of Health. Mr. Mervyn Marquez is Ag. A.O. IV.

**Additions to Staff:**

Mr. Peter Bower joined the staff of the Ministry in January, 1970 as a Petroleum Engineer I. Mr. Bower is a graduate of the University of Paris and the Imperial College University of London (M.Sc., O.I.C). Mr. Frank Look Kin joined the staff of the Ministry as a Petroleum Engineer I with effect from June 24, 1970, Mr. Look Kin is a Government Scholar who obtained the B.Sc. in Geology Engineering in July, 1969 from the Colorado School of Mines U.S.A.

**Attachments of Economists from Venezuela:—**

Dr. Cruz Aguilera and Senora Clara Aguilera, Economists of the Ministry of Mines and Hydrocarburos of the Government of Venezuela, arrived on Monday 5th October, 1970 for a three (3) month attachment to the Economics Division of the Ministry of Petroleum and Mines of Trinidad and Tobago.

**Scholarships Awards:—**

Mr. Stephen Davis, Petroleum Inspector of the Development Section of the Ministry of Petroleum and Mines, was awarded a Government Scholarship to study for a B.Sc. degree in Petroleum Engineering at the University of Tulsa Oklahoma U.S.A.

**Visits Overseas:—**

The Honourable Minister of Petroleum and Mines, Senator O.R. Padmore accompanied by Mr. Ovid Fernandes — Ag. Permanent Secretary and Mr. R. Appleton, Senior Economist in the Ministry visited Washington D.C. in October/November, where they held bi-lateral talks on U.S. Oil imports policy and other trade matters with Mr. Phillip Trezise, Assistant Secretary of State for Economic Affairs and J. Akins, Director of Fuel and Energy of the State Department. On the 14th November, Mr. Rupert Mends, Petroleum Engineer I was attached to the Ministry of Mines and Hydrocarburos of Venezuela. This was to enable him to carry out further assignment and to follow up progress on the reservoir engineering study of the Soldado Marine Field.

**Law of the Sea:—**

The Ministry was represented on the law of the Sea Conference which was held at Lima, Peru in August of 1970 by Mr. R. Appleton. The main object of this conference was to re-assert the principles of the Montevideo Declaration which related to, inter alia, a 200 mile territorial sea limit adopted by nine Latin American States. The conference sought to formulate a common front for the Geneva Conference later in the year.

**Marine Operations:—**

The Ministry commenced the awarding of licences for the exploration and exploitation of Marine reserves off the North Coast on June 29, 1970. The first awards went to an European Group of Companies (AGIP-DEMINEX).

**Training:—**

An inservice Training Course for Petroleum Engineering Assistants and Petroleum Inspectors was conducted by the Development Division, San Fernando from 24th August to 11th September, 1970.

FIG. II

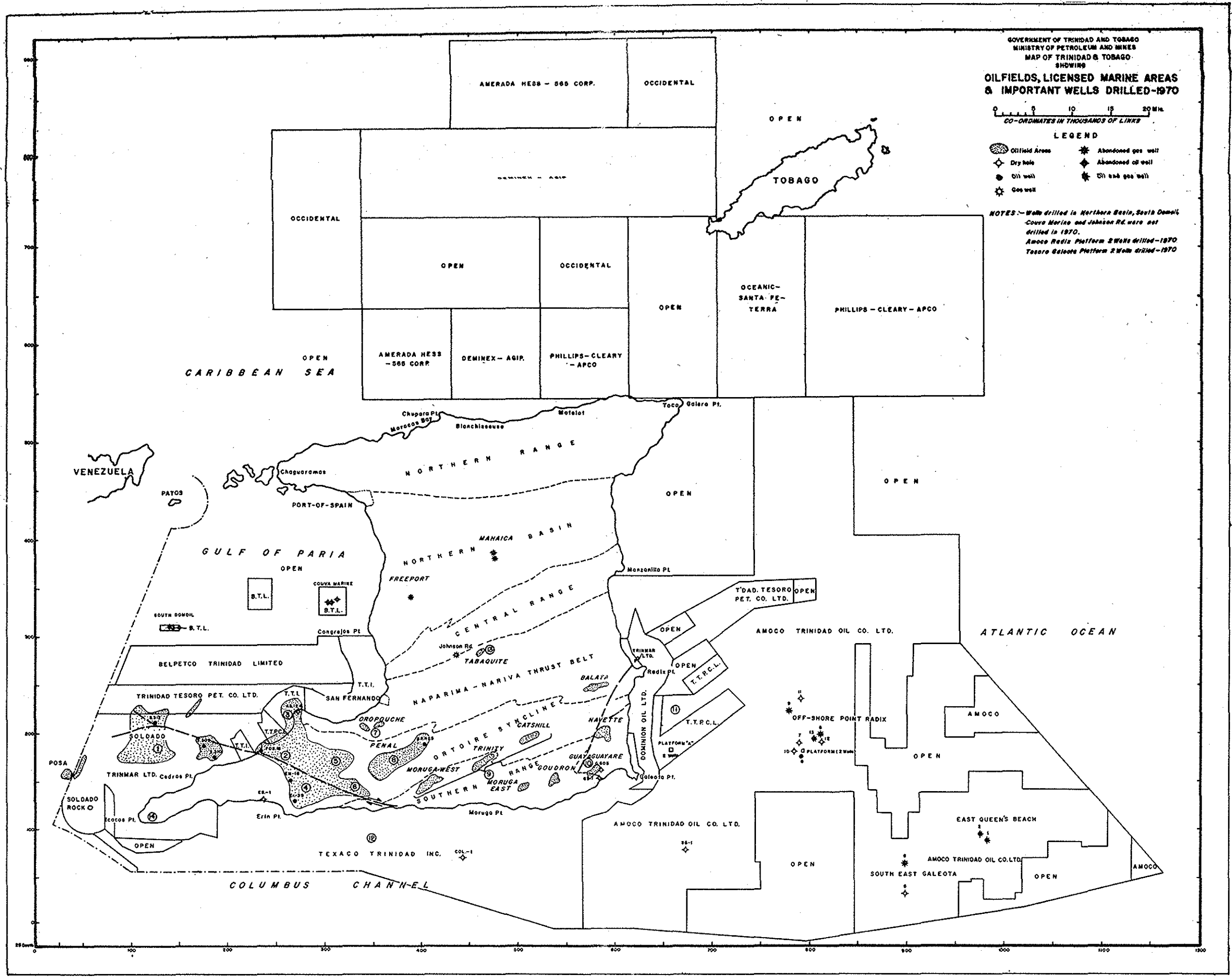




FIG. 1

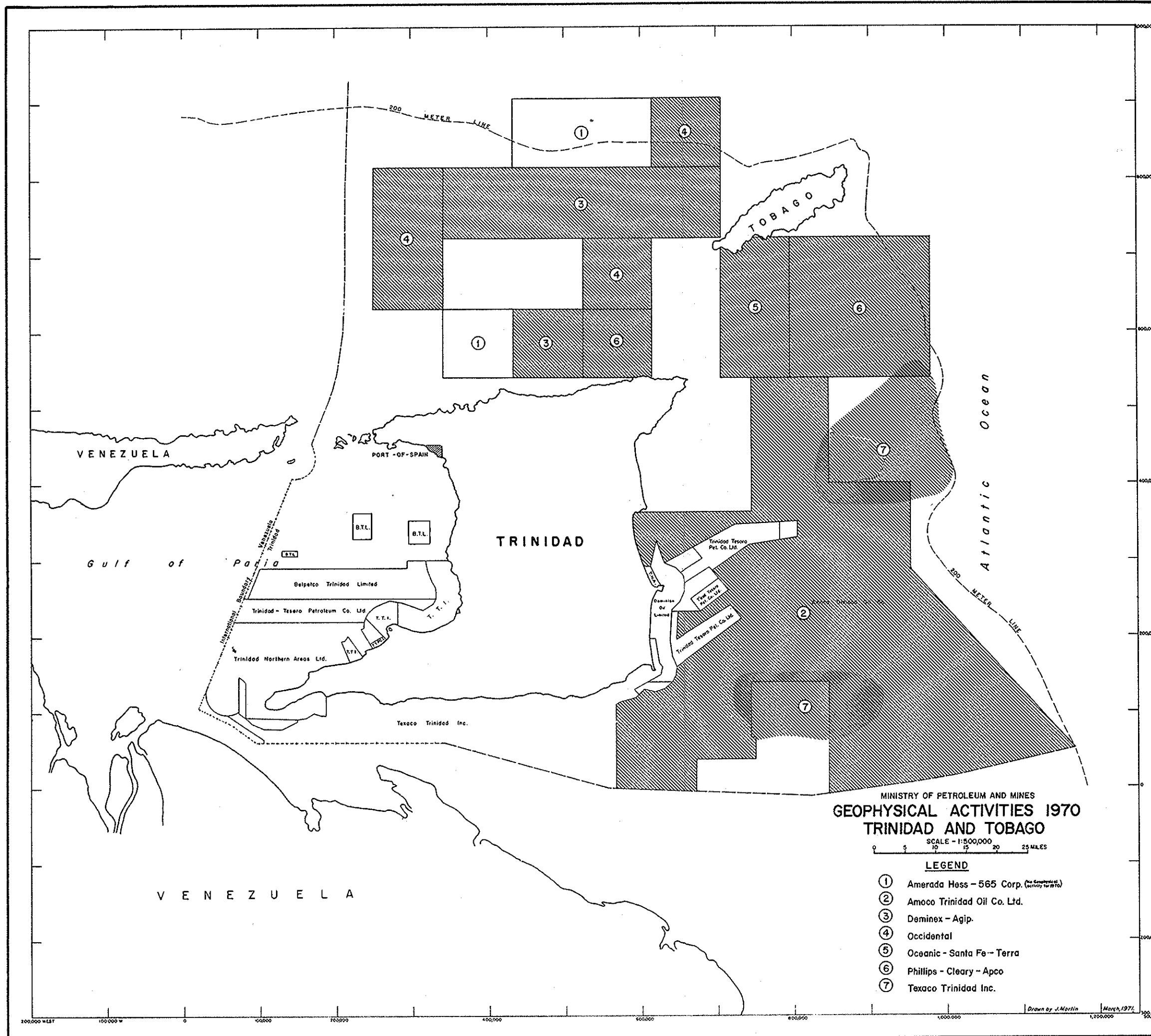
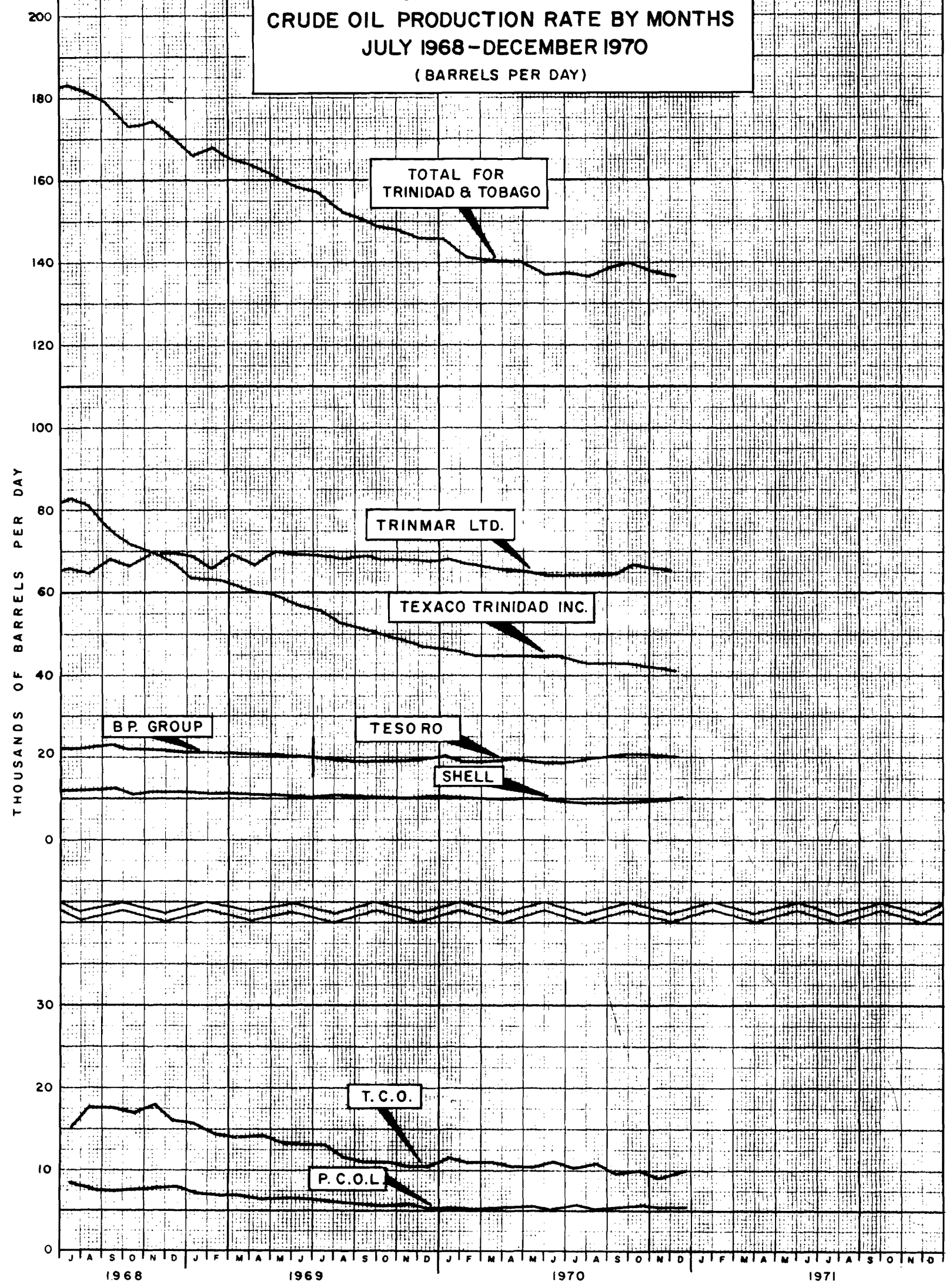
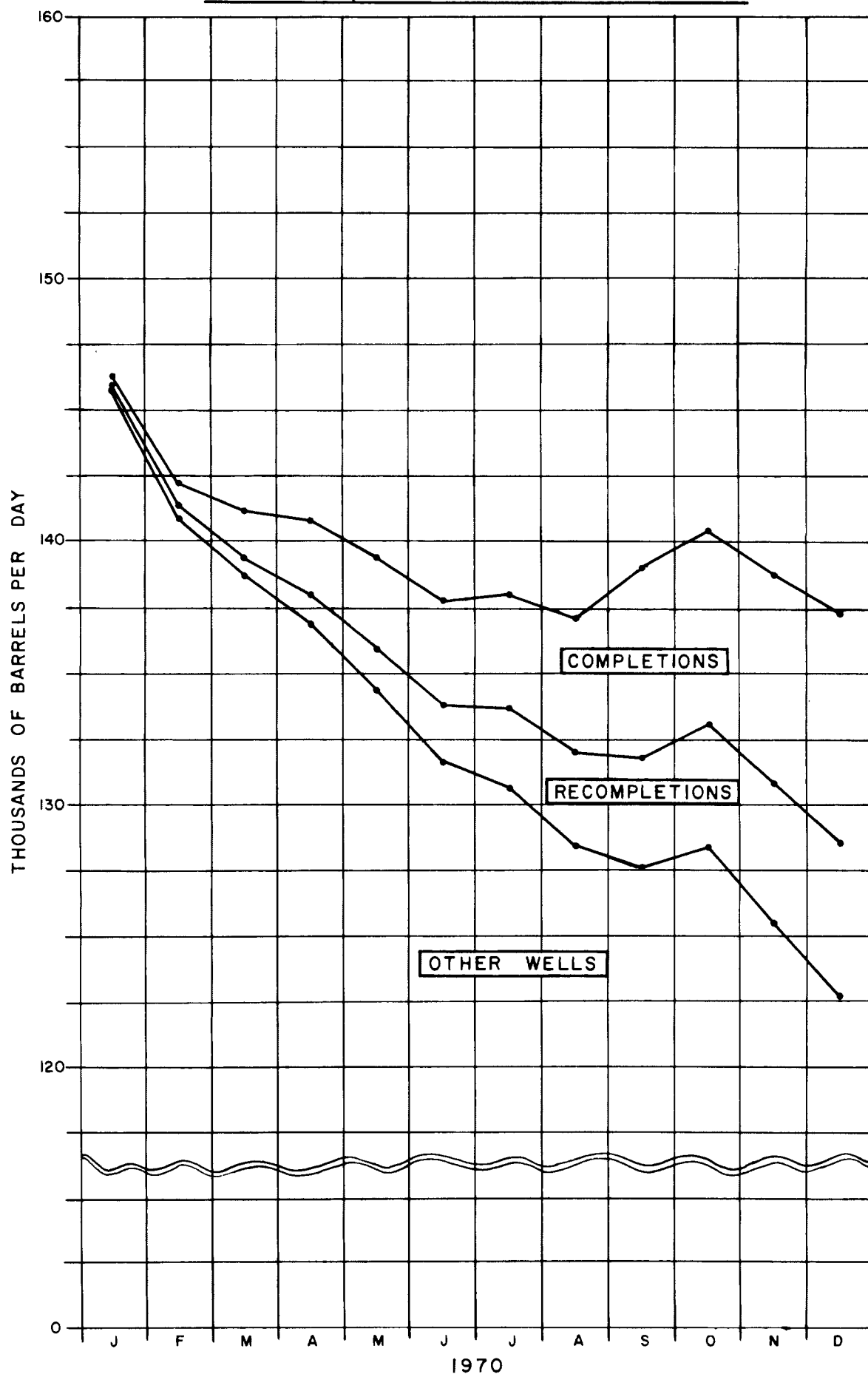


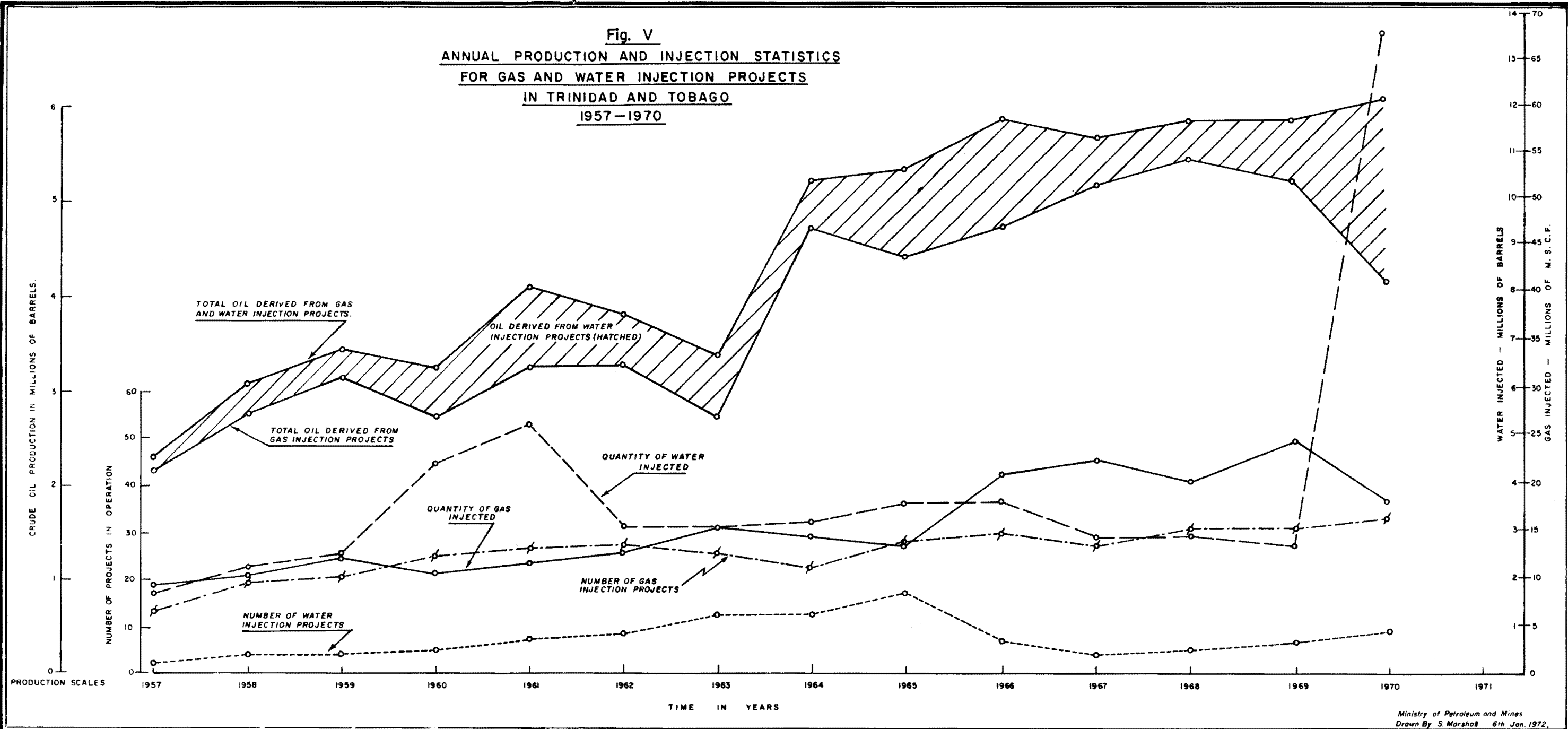
FIG. III  
 MINISTRY OF PETROLEUM AND MINES  
 CRUDE OIL PRODUCTION RATE BY MONTHS  
 JULY 1968 - DECEMBER 1970  
 (BARRELS PER DAY)



MINISTRY OF PETROLEUM AND MINES  
TRINIDAD AND TOBAGO CRUDE OIL PRODUCTION, 1970  
DAILY AVERAGE BY MONTHS DERIVED FROM  
COMPLETIONS, RECOMPLETIONS AND OTHER WELLS

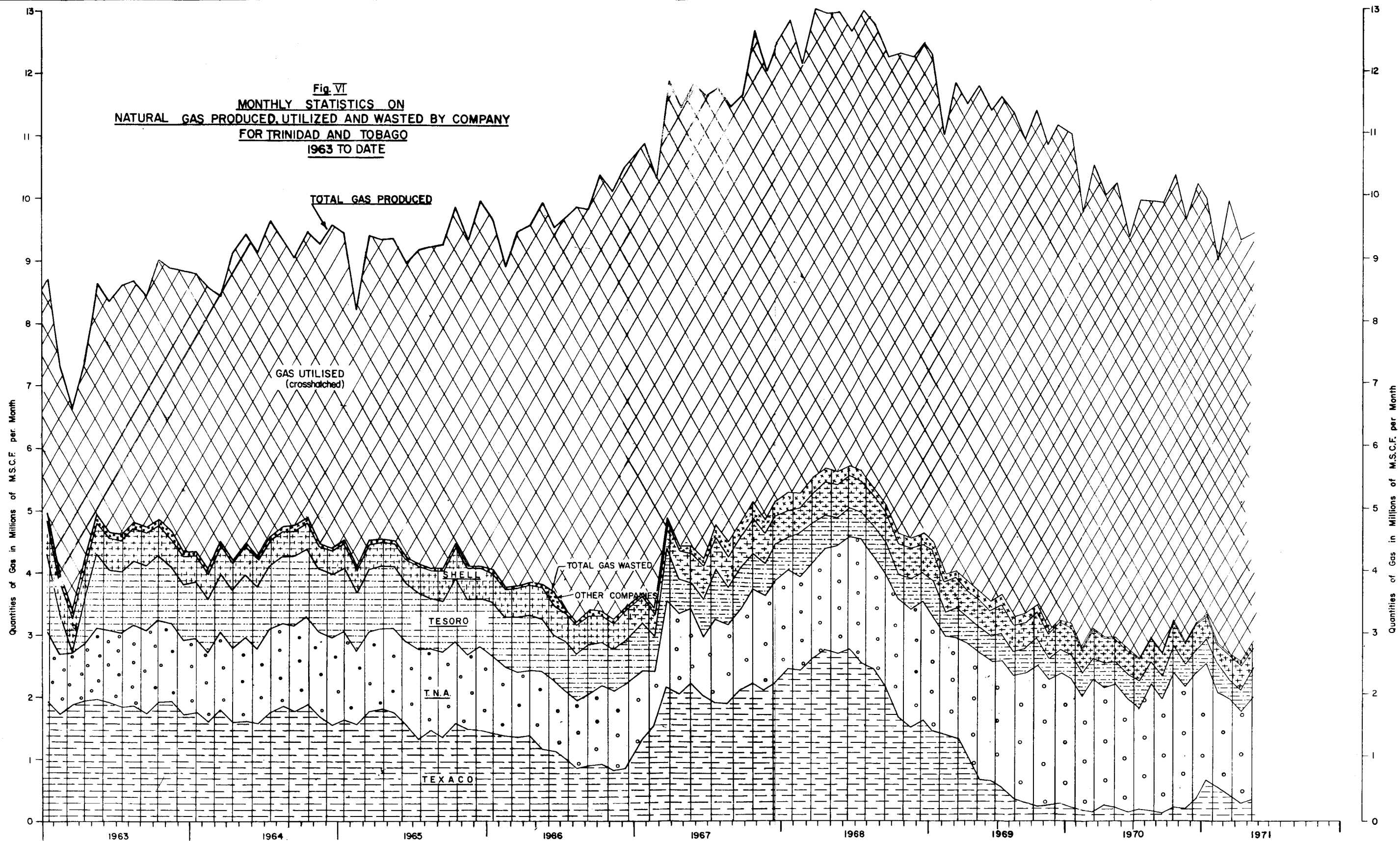


**Fig. V**  
**ANNUAL PRODUCTION AND INJECTION STATISTICS**  
**FOR GAS AND WATER INJECTION PROJECTS**  
**IN TRINIDAD AND TOBAGO**  
**1957-1970**



Ministry of Petroleum and Mines  
 Drawn By S. Marshall 6th Jan. 1972.

Fig. VI  
**MONTHLY STATISTICS ON  
 NATURAL GAS PRODUCED, UTILIZED AND WASTED BY COMPANY  
 FOR TRINIDAD AND TOBAGO  
 1963 TO DATE**

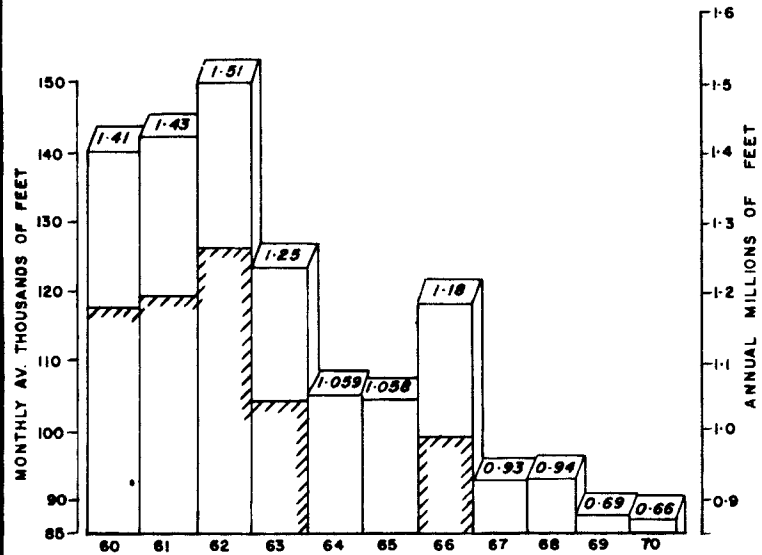


Time in Years

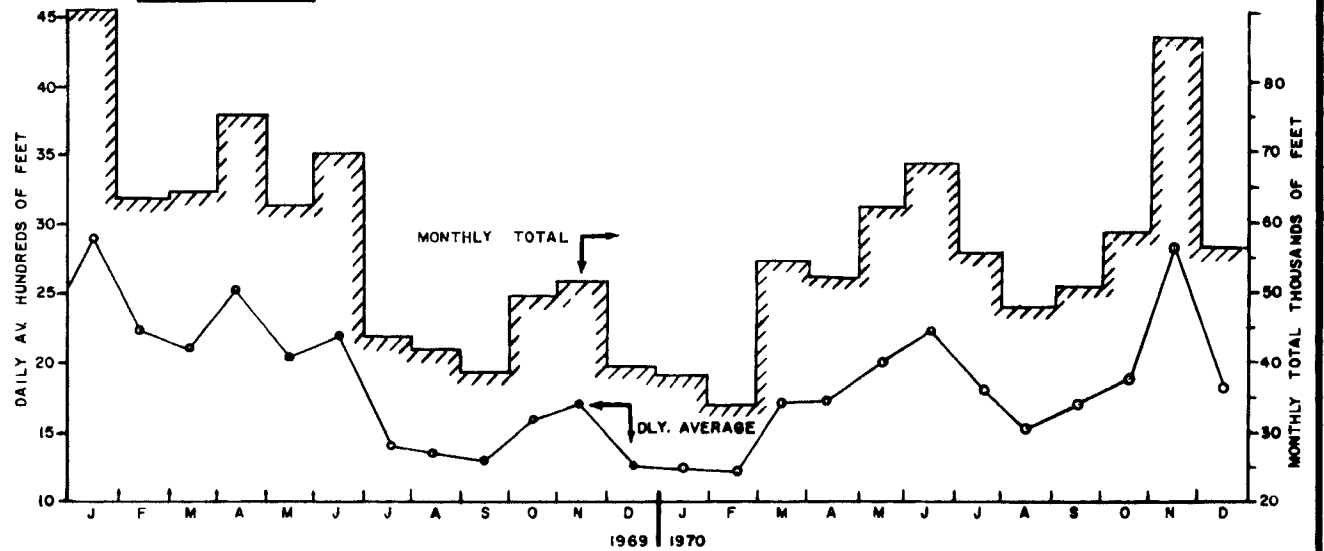
XXXX	GAS UTILISED	=====	TEXACO		BP GROUP	XXXXXX	OTHER COMPANIES
	GAS WASTED	.....	T. N. A.		=====	SHELL	

# STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

FIG. VII



## DRILLING



## CRUDE OIL PRODUCTION

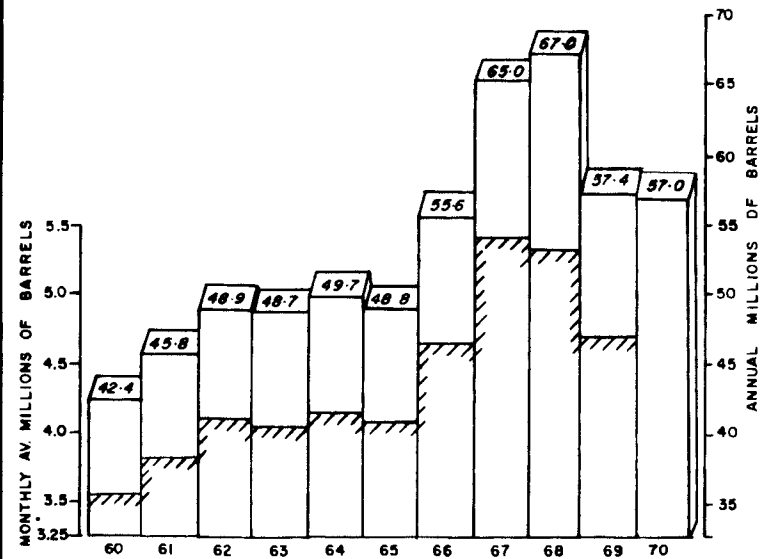


FIG. VIII

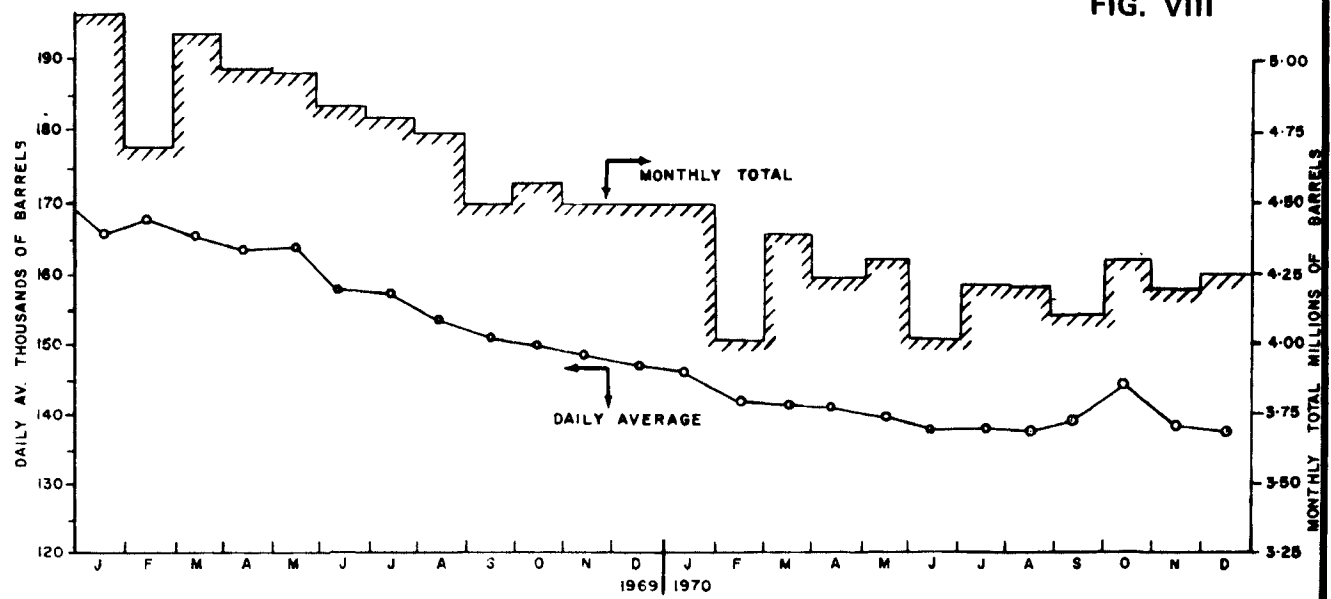
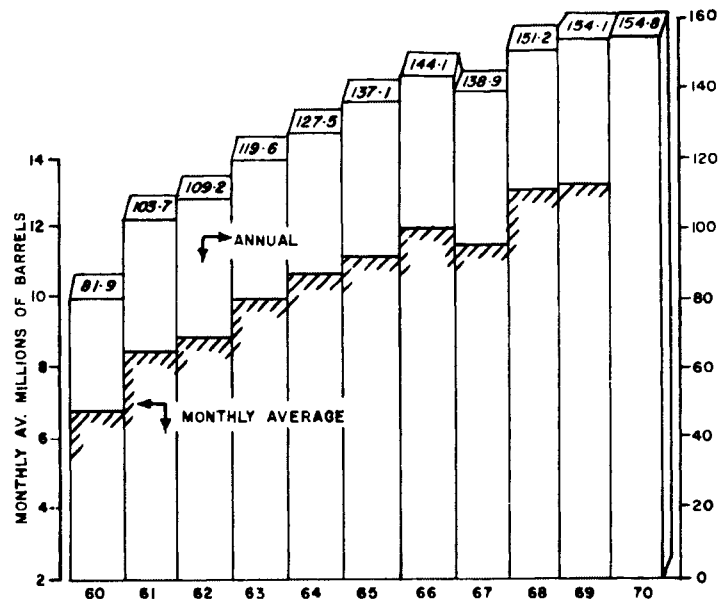
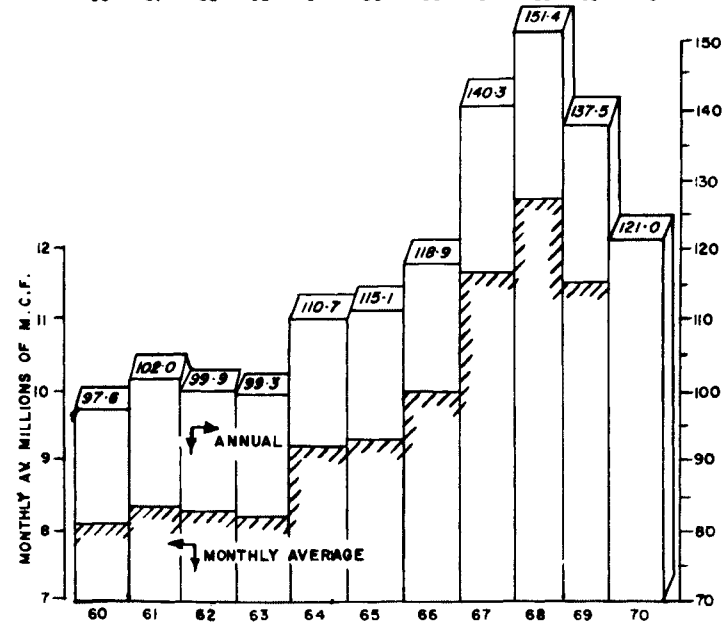
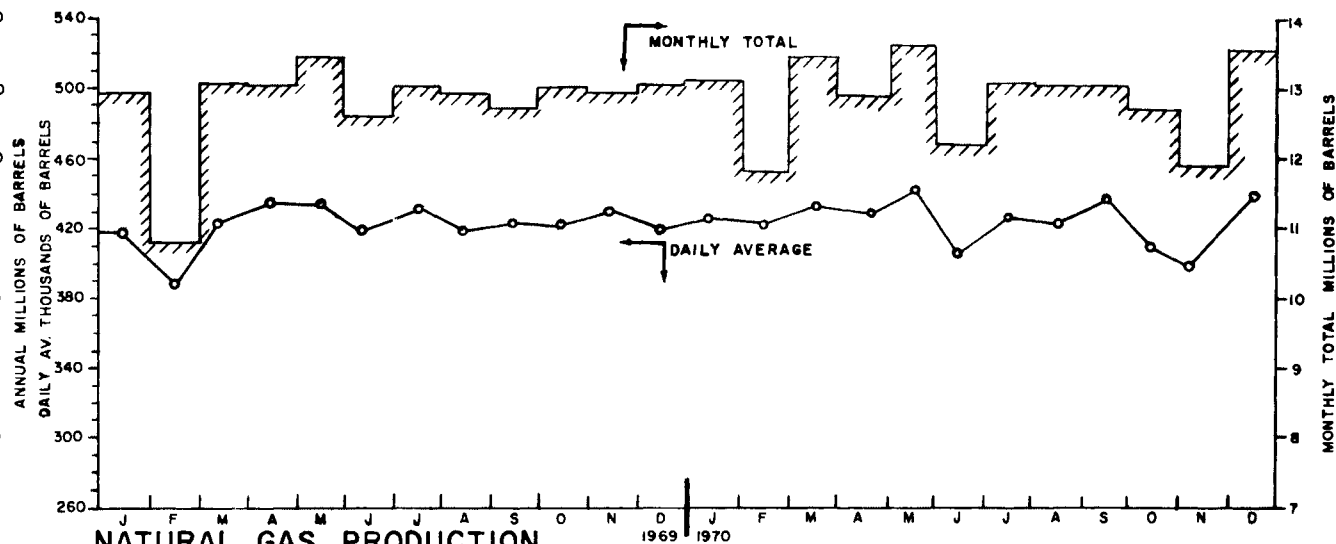


FIG. IX

STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO



REFINERY THROUGHPUT



NATURAL GAS PRODUCTION

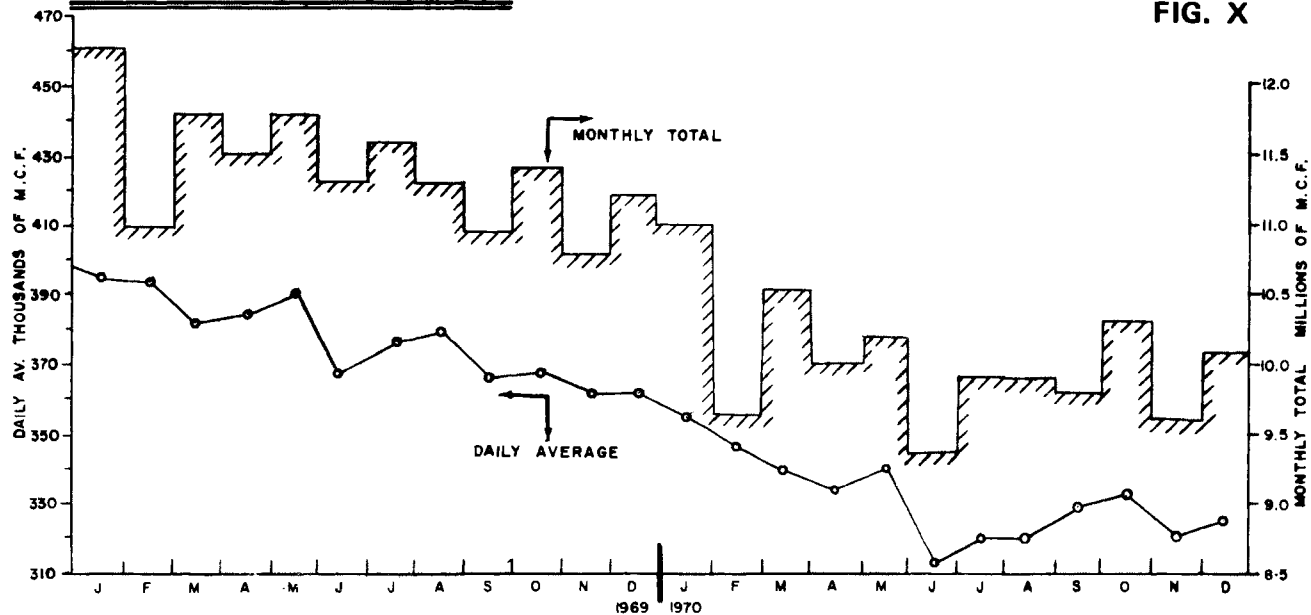
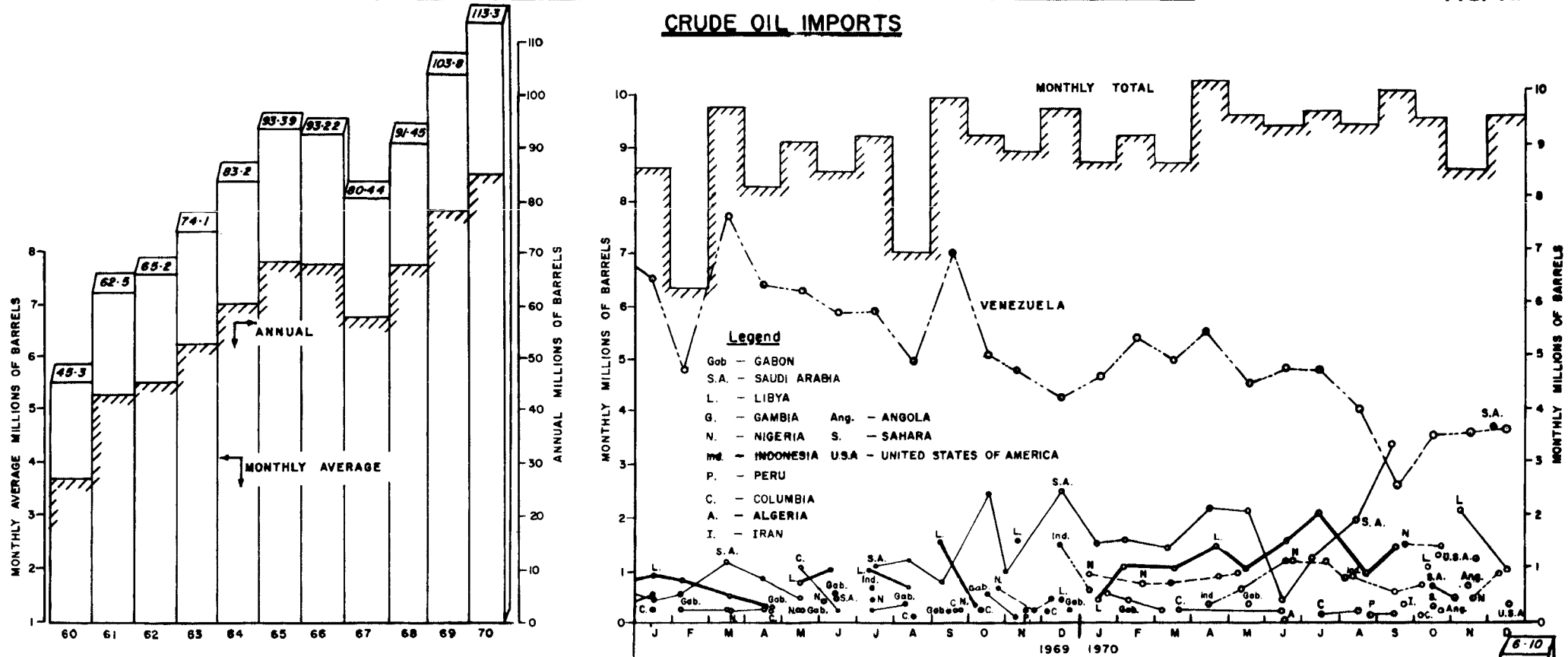


FIG. X

STATISTICS ON THE PETROLEUM INDUSTRY OF TRINIDAD & TOBAGO

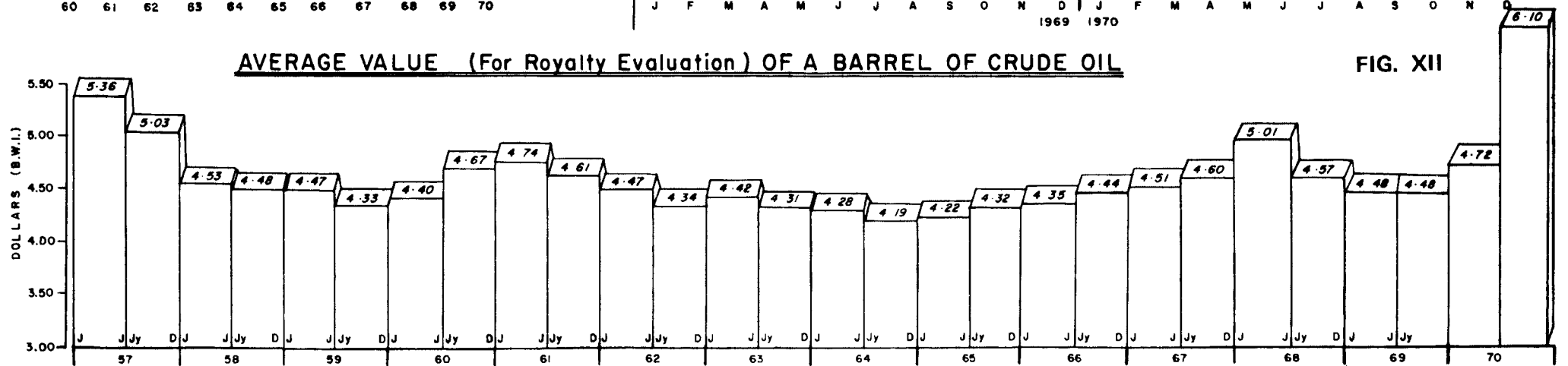
FIG. XI

CRUDE OIL IMPORTS



AVERAGE VALUE (For Royalty Evaluation) OF A BARREL OF CRUDE OIL

FIG. XII



AS DETERMINED BY THE METHDD OUTLINED IN THE LAND (OIL MINING)(AMENDMENT) REGULATIONS, 1953



**APPENDIX I**  
**Annual Statistics of Production, Drilling, Refining – Exports and Imports 1970–1960**

Item	Unit	Percentage Difference 1970–1969	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960
1. Crude Oil . . . . .	'000 bbls	– 11.1	51,047	57,418	66,904	64,995	55,603	48,859	49,731	48,678	48,876	45,768	42,357
2. Casing head gasoline (C.H.P.S.) . . . . .	'000 bbls	+ 12.0	168	150	164	192	188	197	200	170	194	199	202
3. Total Crude Oil and Natural Gasoline (1+2) . . . . .	'000 bbls	– 11.2	51,215	57,668	67,068	65,187	55,791	49,056	49,931	48,848	49,070	45,967	42,559
4. Crude Oil Production – Crown Oil Rights . . . . .	'000 bbls	– 11.9	47,594	54,014	63,345	60,961	51,648	45,274	46,100	45,013	44,302	41,102	37,784
5. Crude Oil Production – Private Oil Rights . . . . .	'000 bbls	+ 1.4	3,452	3,405	3,559	4,034	3,955	3,585	3,631	3,665	4,574	4,666	4,573
6. Total Imports . . . . .	'000 bbls	+ 9.5	115,445	105,418	93,380	84,146	93,508	94,050	83,682	74,758	65,409	62,707	47,267
7. Imports of Refined Products . . . . .	'000 bbls	+ 60.5	69	43	49	43	–	2	54	47	–	46	43
8. Imports of Crude Oil for Refining . . . . .	'000 bbls	+ 9.2	113,275	103,762	91,447	80,437	93,228	93,398	83,223	74,131	65,168	62,510	45,324
9. Imports of Other Oils for Refining and Blending . . . . .	'000 bbls	+ 30.2	2,101	1,613	1,884	3,666	280	650	405	580	241	197	1,900
10. Total Exports . . . . .	'000 bbls	+ 4.8	154,974	147,878	142,076	141,779	135,678	132,440	118,596	106,771	93,927	88,179	68,331
11. Exports of Crude Oil . . . . .	'000 bbls	+ 7.0	8,669	6,139	6,983	5,801	4,705	4,452	3,442	3,773	4,047	4,406	4,127
12. Exports of Refined Products . . . . .	'000 bbls	+ 3.3	146,305	141,648	135,093	135,978	130,973	127,988	115,154	102,998	89,880	83,773	64,204
13. Runs to Stills . . . . .	'000 bbls	+ 0.5	154,860	154,077	151,282	138,925	144,193	137,165	127,548	119,692	109,256	103,755	81,955
14. Number of Wells Started . . . . .	As stated	+ 10.2	140	127	176	213	273	225	192	226	282	286	298
15. Total Number of Wells Completed . . . . .	As stated	+ 3.8	135	130	176	221	275	224	194	232	280	288	312
16. Number of Drilling Wells Completed as Oil Wells . . . . .	As stated	+ 8.1	107	99	151	197	244	201	170	199	255	245	276
17. Number of Drilling Wells Abandoned, &c. . . . .	As stated	– 9.7	28	31	25	24	31	23	24	33	25	43	35
18. Total Footage Drilled (All Wells) . . . . .	Feet	– 3.9	663,743	690,671	942,686	928,210	1,187,202	1,058,736	1,056,337	1,246,248	1,506,187	1,426,002	1,406,412
19. Footage Drilled on Crown Oil Rights . . . . .	Feet	– 7.8	614,719	666,975	928,915	880,839	1,078,133	1,012,922	1,006,636	1,214,166	1,360,450	1,234,023	1,320,132
20. Footage Drilled on Private Oil Rights . . . . .	Feet	+ 106.9	49,024	23,696	13,771	47,371	109,069	45,814	49,701	32,082	145,737	191,979	86,280
21. Average Depth of Completed Drilling Wells (15) . . . . .	Feet	– 7.4	4,917	5,313	5,396	4,328	4,318	4,823	5,513	5,601	5,093	4,654	4,609
22. Total Number of Wells Producing (Average during year) . . . . .	As stated	– 4.1	3,123	3,257	3,381	3,427	3,377	3,227	3,206	3,128	3,273	3,244	3,202
23. Number of Wells Produced by Flowing (Average during year) . . . . .	As stated	– 11.6	626	708	795	891	934	920	1,010	1,007	1,026	1,047	969
24. Number of Wells Produced Artificial Lift (Average during year) . . . . .	As stated	– 2.0	2,497	2,549	2,586	2,536	2,443	2,307	2,196	2,121	2,247	2,197	2,233
25. Average Daily Production per Producing Well . . . . .	Barrel	– 0.8	44.8	48.3	54.1	52.0	45.1	41.5	42.4	42.6	40.9	38.7	36.1
26. Average Daily Production Flowing Well . . . . .	Barrel	– 4.2	119.9	125.2	137.3	117.6	96.3	88.9	92.3	93.5	93.4	85.8	83.9
27. Average Daily Production per Artificial Lift Well . . . . .	Barrel	– 3.3	26.0	26.9	28.5	28.9	25.6	22.6	19.4	18.5	33.0	16.2	15.4
28. Total Value of Domestic Exports . . . . .	\$ '000	+ 1.0	944,131	934,658	910,636	755,100	717,170	678,313	686,254	627,717	579,658	579,548	476,436
29. Total Value of Petroleum Products (Item 28) . . . . .	\$ '000	+ 3.7	668,439	644,676	725,430	593,653	580,947	563,319	573,903	525,690	494,343	193,918	392,612
30. Total Value of Lake Asphalt Products . . . . .	\$ '000	+ 44.4	3,991	2,764	3,209	3,368	3,570	3,139	4,086	3,276	3,024	2,661	2,327
31. Total Natural Gas Produced . . . . .	MMCF	– 11.9	121,060	137,500	151,445	140,338	118,927	111,503	110,732	99,386	99,948	102,335	87,652
32. Used as Fuel . . . . .	MMCF	– 3.2	56,490	58,348	56,410	53,846	48,692	41,517	37,892	28,623	23,814	24,412	22,942
33. Replaced in Formation . . . . .	MMCF	– 23.1	19,018	24,728	21,324	22,625	19,841	13,866	14,688	15,824	13,177	11,841	10,777
34. Losses, Not Collected . . . . .	MMCF	– 18.6	35,356	43,464	62,916	54,355	50,394	56,120	58,152	54,939	62,957	68,082	59,833

**APPENDIX II**  
**Monthly Analysis of Drilling and Workover Wells, 1970**  
**Trinidad and Tobago**

Month	Rig/ Month	New Wells Started	Drilling Wells Completed										Closed in		Monthly Footage Drilled			Average Footage Drilled		Old Wells		
			Oil & Gas Producers		Injection & Observation Wells		Abandoned				Total	Aggregate Depth	Average Depth	No.	Aggregate Depth	Crown	Private	Total	/Day	/Rig /Day	Recompleted	Abandoned
			No.	Aggregate Depth	No.	Aggregate Depth	Dry Holes		Technical Causes													
							No.	Aggregate Depth	No.	Aggregate Depth	No.	Aggregate Depth										
January	4.1	5	4	20,923	—	—	3	20,210	—	—	7	41,133	5,876	—	—	29,610	8,988	38,598	1,245	303.6	16	2
February	4.5	8	3	12,500	—	—	4	17,325	—	—	7	29,825	4,261	—	—	34,441	—	34,441	1,230	273.3	8	—
March	6.5	11	8	40,978	—	—	1	8,405	—	—	9	49,383	5,487	—	—	44,713	10,100	54,813	1,768	272.0	22	5
April	5.1	8	12	64,560	—	—	—	—	—	—	12	64,560	5,380	—	—	50,038	1,362	51,400	1,713	335.9	12	3
May	6.7	14	8	51,813	—	—	—	—	<sup>1a</sup>	3,633	9	55,446	6,161	—	—	43,619	18,316	61,935	1,998	298.2	20	4
June	6.0	11	13	60,091	—	—	3	15,510	—	—	16	75,601	4,725	—	—	56,914	11,452	68,366	2,279	379.8	28	2
July	5.9	20	5	18,808	—	—	4	40,558	—	—	9	59,366	6,596	—	—	51,217	4,600	55,517	1,800	305.1	28	—
August	4.7	10	20	47,579	—	—	1	9,437	—	—	21	57,016	2,715	—	—	44,824	1,880	46,704	1,507	320.6	25	1
September	6.2	7	6	18,860	—	—	2	10,943	—	—	8	29,803	3,725	—	—	48,436	2,390	50,826	1,694	273.2	18	—
October	7.9	15	8	26,300	—	—	3	30,047	—	—	11	56,347	5,122	—	—	46,243	12,282	58,525	1,888	239.0	26	1
November	12.4	16	13	71,667	—	—	1	7,338	<sup>1b</sup>	852	15	79,857	5,324	—	—	75,833	10,451	86,284	2,876	231.9	27	3
December	13.6	11	8	36,062	—	—	2	12,800	—	—	10	48,862	4,886	—	—	40,190	15,078	55,268	1,783	131.1	26	2
Total 1970	83.6	136	108	470,141	—	—	24	172,573	2	4,485	134	647,199	4,830	—	—	566,078	96,899	662,977	1,816	217.2	256	23
Total 1969	84.2	129	99	545,186	—	—	24	153,611	2	12,030	125	710,827	5,687	—	—	677,974	12,697	690,671	1,887	224.1	206	—
% Increase 1970 – 1969	-0.6	7	9	-75,045	—	—	—	18,962	—	-7,545	9	-63,628	-857	—	—	-111,896	84,202	-27,694	-71	-6.9	50	23
Averages 1970	7.0	11.3	9	4,353.2	—	—	—	7,190.5	—	2,242.5	11.2	4,829.8	—	—	—	47,173	8,075	55,248	—	—	21.3	—
Averages 1969	7.0	10.7	8.2	5,506.9	—	—	2	6,400.4	—	6,015	10.4	5,686.6	—	—	5,332.8	56,498	1,058	65,464	—	—	17.2	—

<sup>a</sup>T.T.I. – ABM 141 – abandoned – Drill pipe stuck in hole

<sup>b</sup>T.N.A. – S 314 – abandoned in mud flow.

APPENDIX IIA  
Footage Drilled  
Land & Marine 1970

	January	February	March	April	May	June	July	August	Sept.	October	Nov.	Dec.	Total
Marine . . . . .	18,302	18,234	21,804	23,411	28,597	31,494	17,615	26,033	9,009	20,754	37,714	18,526	271,493
Land . . . . .	20,296	16,207	33,009	27,989	33,338	36,872	38,202	20,671	41,817	37,771	48,570	37,508	392,250
Total . . . . .	38,598	34,441	54,813	51,400	61,935	68,366	55,817	46,704	50,826	58,525	86,284	56,034	663,743
Daily Average Footage	1,245.1	1,230.0	1,768.2	1,713.6	1,997.9	2,278.8	1,800.5	1,506.6	1,694.2	1,887.7	2,876.1	1,807.5	1,818.5
Daily Average Footage Rig	303.7	273.3	272.0	335.9	298.2	379.8	305.2	317.8	272.8	238.4	232.4	133.1	—
Marine % of Total Footage	47.4	52.9	39.8	45.5	46.2	46.1	31.6	55.7	17.7	35.5	43.7	33.1	40.9

**APPENDIX III**  
Analysis of Monthly Production for the Year Ending 31st December - 1970

MONTH	FLOWING				GAS/AIR LIFT				PUMPING				PLUNGER LIFT				OTHER METHODS				SALT WATER				Number of Wells Produced	Number of Idle Wells	Number of Wells Abd.	Number of Wells Drilling at Month End	Total Number of Wells Started	Daily Av. Per Producing Wells	Total Oil Production	BREAKDOWN OF TOTAL PRODUCTION						Average B.O.P.D.	Crown C.H.P.S.	Private C.H.P.S.	Total
	Number of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	Number of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	Number of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	Number of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	Number of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels	Number of Wells	Quantity Barrels	% of Total Oil	Daily Av. Per Well Barrels								CROWN			PRIVATE						
																																Daily Av. Per Producing Wells	Number of Wells	Quantity Produced (Barrels)	Daily Av. Per Producing Wells	Number of Wells	Quantity Produced (Barrels)				
January ... ..	683	2,462,878	54.3	116.6	1,075	1,451,082	32.0	43.5	1,293	566,484	12.5	14.1	119	52,616	1.2	14.3	-	-	-	-	1,913	1,086,672	19.3	18.3	3,170	3,892	2,345	4	9,411	46.1	4,533,060	52.4	2,618	4,248,954	16.6	552	284,106	146,228	9,312	3,193	12,505
February ... ..	673	2,184,934	54.9	115.9	1,071	1,250,475	31.4	41.7	1,281	502,516	12.6	14.0	118	44,183	1.1	13.4	-	-	-	-	1,866	982,289	19.8	18.8	3,143	3,920	2,349	7	9,419	45.2	3,982,108	51.6	2,582	3,728,177	16.2	561	253,931	142,218	8,267	2,660	10,927
March ... ..	657	2,386,613	54.5	117.2	1,075	1,379,156	31.5	41.4	1,300	567,294	13.0	14.1	115	44,157	1.0	12.4	-	-	-	-	1,953	1,104,849	20.2	18.2	3,147	3,921	2,356	5	9,429	44.9	4,377,220	50.9	2,589	4,088,799	16.7	558	288,421	141,200	9,472	3,016	12,488
April ... ..	648	2,296,360	54.4	118.1	1,051	1,329,074	31.5	42.2	1,279	551,727	13.0	14.2	109	47,665	1.1	14.6	-	-	-	-	1,848	1,112,648	20.8	20.0	3,087	3,985	2,360	6	9,438	45.6	4,224,826	51.7	2,540	3,938,806	17.4	547	286,020	140,827	9,137	3,098	12,235
May ... ..	623	2,311,738	53.5	119.7	1,052	1,382,764	32.0	42.4	1,318	574,580	13.3	14.1	122	53,093	1.2	14.0	-	-	-	-	1,851	1,222,718	20.6	19.6	3,115	3,965	2,366	6	9,452	44.8	4,322,175	50.8	2,564	4,036,452	16.7	551	285,723	139,425	9,509	2,142	11,651
June ... ..	638	2,211,691	53.5	115.6	1,047	1,302,699	31.5	41.5	1,326	567,113	13.7	14.3	126	51,064	1.3	13.5	-	-	-	-	1,882	1,088,984	20.9	19.3	3,137	3,948	2,372	7	9,464	43.9	4,132,567	50.0	2,575	3,858,789	16.3	560	273,778	137,752	8,925	2,166	11,091
<b>PRODUCTION TOTAL</b> 1st Jan. - 30th June	654	13,854,214	54.2	117.0	1,062	8,095,250	31.6	42.1	1,299	3,329,714	13.0	14.2	118	292,778	1.1	13.7	-	-	-	-	1,886	6,498,160	20.3	19.0	3,133	3,938	2,372	-	9,464	45.1	25,571,956	51.2	2,578	23,899,977	16.4	555	1,671,979	141,281	54,622	16,275	70,897
July ... ..	600	2,269,603	53.0	122.0	1,066	1,351,260	31.6	40.9	1,336	604,646	14.1	14.6	128	53,162	1.2	13.4	4	41	0.1	0.3	1,937	1,156,138	21.3	19.3	3,134	3,976	2,374	3	9,487	44.0	4,278,712	49.8	2,571	3,967,913	17.8	564	310,799	138,022	9,014	2,763	11,777
August ... ..	613	2,227,527	52.4	117.2	1,021	1,334,407	31.4	42.2	1,378	637,875	15.0	15.0	130	50,622	1.2	12.6	4	63	-	0.5	1,985	1,205,752	22.1	19.6	3,146	3,969	2,375	7	9,497	43.6	4,250,494	48.9	2,609	3,956,224	17.7	537	294,270	137,113	8,438	2,806	11,244
September ... ..	607	2,201,246	52.8	120.9	1,019	1,284,409	30.8	42.0	1,367	636,215	15.2	15.5	130	49,432	1.2	12.7	3	31	-	0.3	2,004	1,093,182	20.8	18.2	3,126	3,995	2,377	6	9,504	44.5	4,171,333	50.3	2,569	3,877,337	17.6	557	293,996	139,044	8,436	2,263	10,699
October ... ..	600	2,319,250	53.3	124.7	1,036	1,318,076	30.3	41.0	1,381	666,317	15.3	15.6	131	50,498	1.1	12.4	4	77	-	0.6	1,993	1,132,832	20.6	18.3	3,152	3,975	2,381	10	9,518	44.6	4,354,218	50.5	2,585	4,049,684	17.3	567	304,534	140,458	8,869	2,521	11,390
November ... ..	590	2,236,878	53.7	126.4	1,029	1,244,824	29.9	40.3	1,346	631,817	15.2	15.6	119	48,307	1.2	13.5	4	41	-	0.3	1,951	1,100,796	20.9	18.8	3,088	4,048	2,385	13	9,534	44.9	4,161,867	51.0	2,536	3,877,099	17.2	552	284,768	138,729	8,489	1,600	10,089
December ... ..	577	2,278,130	53.5	127.4	1,005	1,257,776	29.5	40.4	1,337	673,035	15.8	16.2	114	49,302	1.2	14.0	4	70	-	0.6	1,890	1,113,413	20.7	19.0	3,037	4,106	2,392	11	9,546	45.2	4,258,313	51.5	2,485	3,966,178	17.1	552	292,135	137,365	8,290	1,752	10,042
<b>PRODUCTION TOTAL</b> 1st July - 31st Dec.	598	13,532,634	53.1	123.1	1,029	7,790,752	30.6	41.1	1,358	3,849,905	15.1	15.4	125	301,323	1.2	13.1	4	323	-	-	1,960	6,802,113	21.2	18.9	3,110	4,011	2,392	-	9,546	44.5	25,474,937	50.3	2,559	23,694,435	17.4	555	1,780,502	138,451	51,536	13,705	65,241
<b>YEAR'S PRODUCTION TOTAL</b>	-	27,386,848	53.7	-	-	15,886,002	31.1	-	-	7,179,619	14.1	-	-	594,101	1.2	-	-	323	-	-	-	13,300,273	20.7	-	-	-	2,392	-	9,546	-	51,046,893	-	-	47,594,412	-	-	3,452,481	139,854	106,158	29,980	136,138
<b>DAILY AVERAGES</b>	-	75,032	-	-	-	43,523	-	-	-	19,670	-	-	-	1,628	-	-	-	1	-	-	-	36,439	-	-	-	-	-	-	-	139,854	-	-	130,395	-	-	9,459	-	291	82	373	
<b>AVERAGES DURING YEAR</b>	626	-	-	119.9	1,045	-	-	41.6	1,327	-	-	14.8	121	-	-	13.4	4	-	-	-	1,923	-	-	18.9	3,123	3,974	-	-	44.8	-	50.8	2,568	-	17.1	554	-	-	-	-	-	

**APPENDIX IIIA, 1970**  
**Ministry of Petroleum and Mines**  
**Analysis of Production by Operating Companies**

	FLOWING				GAS LIFT				PUMPING				PLUNGER LIFT				SALT WATER				Av. No. of Wells Prod.	Daily Av. per Producing Well	Total Oil Produced (Barrels)	Coy's Prod. as % of Ttl. Prod'n	Crown Production		Private Production	
	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well	Av. No. of Wells	Quantity (Barrels)	% of Total	Daily Av. per Well					Production Barrel	% of Total	Production (Barrels)	% of Total
Trinidad Tesoro Petroleum Co. Limited	189	2,335,767	32.5	33.9	205	1,660,266	23.1	22.2	455	2,592,215	36.1	15.6	121	594,101	8.3	13.4	518	1,529,182	17.6	8.1	970	20.3	7,182,349	14.1	5,259,027	73.2	1,923,322	26.8
Texaco Trinidad Inc.	182	4,749,522	29.4	71.5	747	9,236,599	57.2	33.9	434	2,167,441	13.4	13.7	-	-	-	-	994	6,527,276	28.8	18.0	1363	32.5	16,153,562	31.6	15,106,780	93.5	1,046,782	6.5
Shell Trinidad Limited	78	1,010,591	33.4	35.5	25	379,324	12.5	41.6	268	1,636,873	54.1	16.7	-	-	-	-	158	1,161,222	27.7	20.1	371	22.4	3,026,788	6.0	2,695,894	89.1	330,894	10.9
Premier Consolidated Oilfields Limited	4	13,806	7.0	9.5	1	5,009	2.5	13.7	107	179,621	90.5	4.6	-	-	-	-	43	66,457	25.1	4.2	112	4.9	198,436	0.4	46,953	23.7	151,483	76.3
Trinidad Canadian Oilfields Limited	11	107,829	28.4	26.9	6	59,144	15.6	27.0	61	212,782	56.0	9.6	-	-	-	-	63	237,488	38.5	10.3	78	13.5	379,755	0.7	379,755	100.0	-	-
Trinidad Northern Areas Limited	162	19,169,333	79.5	324.2	61	4,545,660	18.9	204.2	6	391,010	1.6	178.5	-	-	-	-	147	3,778,648	13.5	70.4	229	288.4	24,106,003	47.2	24,106,003	100.0	-	-
<b>Total</b>	<b>626</b>	<b>27,386,848</b>	<b>53.7</b>	<b>119.9</b>	<b>1045</b>	<b>15,886,002</b>	<b>31.1</b>	<b>41.6</b>	<b>1331</b>	<b>7,179,942</b>	<b>14.1</b>	<b>14.8</b>	<b>121</b>	<b>594,101</b>	<b>1.1</b>	<b>13.4</b>	<b>1923</b>	<b>13,300,273</b>	<b>20.7</b>	<b>18.9</b>	<b>3123</b>	<b>44.8</b>	<b>51,046,893</b>	<b>100.0</b>	<b>47,594,412</b>	<b>93.2</b>	<b>3,452,481</b>	<b>6.8</b>
<b>Total - 1969</b>	<b>708</b>	<b>32,357,859</b>	<b>56.4</b>	<b>125.2</b>	<b>1108</b>	<b>17,458,385</b>	<b>30.4</b>	<b>43.2</b>	<b>1302</b>	<b>6,874,934</b>	<b>11.9</b>	<b>14.5</b>	<b>138</b>	<b>727,315</b>	<b>1.3</b>	<b>14.4</b>	<b>1982</b>	<b>13,643,044</b>	<b>19.2</b>	<b>18.9</b>	<b>3257</b>	<b>48.3</b>	<b>57,418,493</b>	<b>100.0</b>	<b>54,018,269</b>	<b>94.1</b>	<b>3,400,224</b>	<b>5.9</b>

**Natural Gasoline C.H.P.S. Production**

Company	Crown Oil Rights	Private Oil Rights	Total
	Barrels	Barrels	Barrels
Trinidad Tesoro Petroleum Co. Ltd.	106,158	29,980	136,138
<b>Total 1969</b>	<b>113,182</b>	<b>37,286</b>	<b>150,468</b>

**APPENDIX IIIB**  
**Daily Average Production by Months for all Companies -- 1970**  
*(All quantities in bbls.)*

Company	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total	
													Crude	B.O.P.D.
T.T.P.C.L.	626,267	533,315	600,097	583,827	584,149	556,880	596,172	606,791	617,834	641,315	614,904	620,798	7,182,349	19,678
B.O.P.D.	20,202	19,047	19,358	19,461	18,844	18,563	19,231	19,574	20,594	20,688	20,497	20,026		
S.T.L.	273,223	229,995	255,792	251,770	263,808	245,597	253,030	244,532	244,412	252,115	245,748	266,766	3,026,788	8,293
B.O.P.D.	8,814	8,214	8,251	8,392	8,510	8,186	8,162	7,888	8,147	8,132	8,192	8,605		
T.T.I.	1,452,187	1,277,400	1,402,101	1,360,627	1,395,216	1,354,144	1,380,955	1,339,265	1,306,160	1,334,679	1,266,933	1,283,925	16,153,562	44,256
B.O.P.D.	46,845	45,621	45,229	45,354	45,007	45,137	44,547	43,202	43,539	43,054	42,231	41,417		
T.C.O.	36,219	31,627	34,055	31,665	32,510	32,641	31,358	32,912	28,940	30,119	27,182	30,527	379,755	1,040
B.O.P.D.	1,168	1,130	1,098	1,056	1,048	1,088	1,012	1,062	965	972	906	985		
P.C.O.L.	17,008	15,386	16,384	16,183	16,711	15,080	17,389	16,666	16,180	17,082	17,320	17,047	198,436	544
B.O.P.D.	549	549	529	539	539	503	560	538	539	551	577	550		
T.N.A.	2,128,156	1,894,385	2,068,791	1,980,754	2,029,781	1,928,255	1,999,808	2,010,328	1,957,807	2,078,908	1,989,780	2,039,250	24,106,003	66,043
B.O.P.D.	68,650	67,657	66,735	66,025	65,477	64,275	64,510	64,849	65,260	67,061	66,326	65,782		
TOTAL 1970	4,533,060	3,982,108	4,377,220	4,224,826	4,322,175	4,132,537	4,278,712	4,250,494	4,171,333	4,354,218	4,161,867	4,258,313	51,046,893	139,854
B.O.P.D.	146,228	142,218	141,200	140,827	139,425	137,752	138,022	137,139	139,044	140,458	138,729	137,365		
TOTAL 1969	5,165,661	4,706,506	5,121,129	4,907,518	4,995,547	4,758,896	4,869,251	4,750,852	4,541,891	4,618,441	4,439,947	4,542,854	57,418,493	157,311
B.O.P.D.	166,634	168,088	165,198	163,583	161,146	158,630	157,073	153,253	151,396	148,981	147,998	146,544		

**APPENDIX IIC**  
**Marine Offshore Land Production 1970**  
*(All Quantities in bbls)*

Type of Well	January		February		March		April		May		June		Jan-June		July		August		September		October		November		December		Av. No.	July - Dec.		Grand Total		
	Wells	Production	Wells	Production	Wells	Production	Wells	Production	Wells	Production	Wells	Production	Av. No. of Wells	Production	Wells	Production	Wells	Production	Wells	Production	Wells	Production	Wells	Production	Wells	Production	Wells	Production	Wells	Production		
<b>Marine</b>																																
TNA Soldado	220	2,122,405	220	1,886,639	220	2,056,165	218	1,967,220	220	2,018,381	226	1,913,895	221	11,964,705	218	1,982,184	219	1,991,414	221	1,939,888	223	2,063,583	221	1,971,968	215	2,021,260	220	11,970,297	221	23,935,002		
" Ft. 1: Ft. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Texaco ABM	104	151,796	101	122,937	103	137,972	103	133,129	102	130,340	97	124,100	102	800,274	96	122,774	102	127,464	99	121,870	104	117,505	99	114,875	102	123,736	100	728,224	101	1,528,498		
" ALM	2	4,896	2	6,693	2	5,882	1	5,721	1	5,678	1	5,234	1	34,104	1	5,162	2	4,864	1	5,789	1	5,146	1	4,541	2	6,687	1	32,189	-	66,295		
Belpecto Couva Marine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-		
Tesoro North Marine	3	14,124	2	10,352	2	13,904	2	13,612	2	12,095	2	8,354	2	72,441	2	10,497	2	12,386	2	11,796	2	10,781	2	12,290	2	12,351	2	70,101	2	142,542		
Tesoro G. Wells	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>Sub Total</b>	<b>329</b>	<b>2,293,221</b>	<b>325</b>	<b>2,026,621</b>	<b>327</b>	<b>2,213,923</b>	<b>324</b>	<b>2,119,682</b>	<b>325</b>	<b>2,166,494</b>	<b>326</b>	<b>2,051,583</b>	<b>326</b>	<b>12,871,524</b>	<b>317</b>	<b>2,120,617</b>	<b>325</b>	<b>2,136,128</b>	<b>323</b>	<b>2,079,343</b>	<b>330</b>	<b>2,197,015</b>	<b>323</b>	<b>2,103,674</b>	<b>321</b>	<b>2,164,034</b>	<b>323</b>	<b>12,800,811</b>	<b>325</b>	<b>25,672,335</b>		
<b>Deviated from Shore</b>																																
TNA F.O.S.	8	5,751	7	7,746	8	12,626	8	13,534	7	11,400	10	14,360	8	65,417	10	17,624	10	18,914	8	17,919	10	15,325	10	17,812	9	17,990	10	105,584	9	171,001		
Texaco AS	59	41,346	58	35,216	57	34,865	64	32,356	60	34,440	60	37,816	59	216,039	60	40,109	59	33,738	56	37,906	49	34,380	49	38,378	51	34,266	54	218,777	56	434,816		
" ALS	4	11,907	4	9,544	4	9,768	4	8,495	4	9,833	4	9,110	4	58,657	4	8,845	5	9,894	6	11,356	5	13,763	5	11,067	5	9,791	5	64,716	5	123,373		
Tesoro M. Wells	2	525	1	489	2	1,287	3	671	3	923	4	694	3	4,589	5	1,044	5	1,480	4	1,070	5	1,012	4	774	3	573	4	5,953	4	10,542		
<b>Sub Total</b>	<b>73</b>	<b>59,529</b>	<b>70</b>	<b>52,995</b>	<b>71</b>	<b>58,546</b>	<b>79</b>	<b>55,056</b>	<b>74</b>	<b>56,596</b>	<b>78</b>	<b>61,980</b>	<b>74</b>	<b>344,702</b>	<b>79</b>	<b>67,622</b>	<b>79</b>	<b>64,026</b>	<b>74</b>	<b>68,251</b>	<b>69</b>	<b>64,480</b>	<b>68</b>	<b>68,031</b>	<b>68</b>	<b>62,620</b>	<b>73</b>	<b>395,030</b>	<b>74</b>	<b>739,732</b>		
<b>Marine &amp; Deviated</b>	<b>402</b>	<b>2,352,750</b>	<b>395</b>	<b>2,079,616</b>	<b>398</b>	<b>2,272,469</b>	<b>403</b>	<b>2,174,738</b>	<b>399</b>	<b>2,223,090</b>	<b>404</b>	<b>2,113,563</b>	<b>400</b>	<b>13,216,226</b>	<b>396</b>	<b>2,188,239</b>	<b>404</b>	<b>2,200,154</b>	<b>397</b>	<b>2,147,594</b>	<b>399</b>	<b>2,261,495</b>	<b>391</b>	<b>2,171,705</b>	<b>389</b>	<b>2,226,654</b>	<b>396</b>	<b>13,195,841</b>	<b>398</b>	<b>26,412,067</b>		
<b>Land</b>	<b>2,768</b>	<b>2,180,310</b>	<b>2,748</b>	<b>1,902,492</b>	<b>2,749</b>	<b>2,104,751</b>	<b>2,684</b>	<b>2,050,088</b>	<b>2,716</b>	<b>2,099,085</b>	<b>2,733</b>	<b>2,019,004</b>	<b>2,733</b>	<b>12,355,730</b>	<b>2,739</b>	<b>2,090,473</b>	<b>2,742</b>	<b>2,050,340</b>	<b>2,729</b>	<b>2,023,739</b>	<b>2,753</b>	<b>2,092,723</b>	<b>2,697</b>	<b>1,990,162</b>	<b>2,648</b>	<b>2,031,659</b>	<b>2,718</b>	<b>12,279,096</b>	<b>2,726</b>	<b>24,634,826</b>		
<b>Total Production</b>	<b>3,170</b>	<b>4,533,060</b>	<b>3,143</b>	<b>3,982,108</b>	<b>3,147</b>	<b>4,377,220</b>	<b>3,087</b>	<b>4,224,826</b>	<b>3,115</b>	<b>4,322,175</b>	<b>3,137</b>	<b>4,132,567</b>	<b>3,133</b>	<b>25,571,956</b>	<b>3,135</b>	<b>4,278,712</b>	<b>3,146</b>	<b>4,250,494</b>	<b>3,126</b>	<b>4,171,333</b>	<b>3,152</b>	<b>4,354,218</b>	<b>3,088</b>	<b>4,161,867</b>	<b>3,037</b>	<b>4,258,313</b>	<b>3,114</b>	<b>25,474,937</b>	<b>3,124</b>	<b>51,046,893</b>		

**APPENDIX IV**  
**Production and Disposal of Natural Gas - 1970**  
*(All figures of Gas Production in MCF)*  
*M - 1,000 Standard Cubic Ft.*

Half Yearly Totals	Crude Oil Production barrels	Average G.O.R. Cu. ft. barrels	Natural Gas Production	Natural Gas Disposal													Inter Oil Company Sales	Used for the manufacture of Petro/Chem.
				Sales to other Non-Oil Companies	Replaced into formation	Converted to CHPS	Used as Fuel		Vented to Atmosphere		Total	Pipe line Losses and unaccounted for	Not Collected	Natural Gas Recovery				
							In fields	In Refineries	After Use	Without Use				Natural Gas treated	Average Plant Recovery IG/MCF	Natural Gasoline Produced barrels		
January	4,533,060	2,426	10,998,141	2,680,621	1,995,657	13,119	760,631	2,394,739	1,295,823	729,584	2,025,407	347,174	780,793	1,607,933	333	15,326	1,585,533	892,182
February	3,982,108	2,439	9,713,887	2,164,575	1,794,319	11,466	705,680	2,277,852	1,116,732	734,473	1,851,205	309,483	599,307	827,877	461	10,927	1,457,510	699,405
March	4,377,220	2,401	10,508,022	2,580,680	1,678,671	13,102	739,194	2,408,821	1,156,442	1,057,801	2,214,243	249,064	624,247	958,264	455	12,488	1,645,078	858,004
April	4,224,826	2,369	10,020,135	2,558,925	1,557,365	12,837	680,689	2,269,107	1,172,706	884,438	2,057,144	233,957	650,111	892,565	479	12,236	1,561,096	853,704
May	4,322,175	2,359	10,196,847	2,720,377	1,487,766	12,223	740,782	2,295,376	1,113,160	1,024,811	2,137,971	110,651	691,701	969,261	418	11,651	1,590,578	947,948
June	4,132,537	2,355	9,730,986	2,443,004	1,570,538	11,636	723,402	2,235,756	1,046,703	938,743	1,985,446	132,078	629,126	1,560,992	305	13,634	1,550,756	769,102
<b>HALF-YEAR TOTAL</b>	<b>25,571,956</b>	<b>2,392</b>	<b>61,168,018</b>	<b>15,148,182</b>	<b>10,084,316</b>	<b>74,383</b>	<b>4,350,378</b>	<b>13,881,651</b>	<b>6,901,566</b>	<b>5,369,850</b>	<b>12,271,416</b>	<b>1,382,407</b>	<b>3,975,285</b>	<b>6,816,892</b>	<b>391</b>	<b>76,262</b>	<b>9,390,551</b>	<b>4,990,345</b>
July	4,278,712	2,320	9,927,712	2,379,180	1,739,424	12,356	743,061	2,253,255	1,059,688	980,417	2,040,105	118,557	641,774	1,786,789	386	19,345	1,699,897	739,705
August	4,250,494	2,335	9,925,811	2,545,267	1,489,159	11,797	725,599	2,220,200	1,058,070	1,013,678	2,071,748	198,585	663,456	1,670,973	310	14,818	1,579,571	860,149
September	4,171,333	2,365	9,866,306	2,786,972	1,450,713	11,225	726,175	2,197,109	1,020,383	974,303	1,994,686	85,767	613,659	1,972,259	273	15,393	1,532,238	977,337
October	4,354,218	2,375	10,343,154	2,568,921	1,557,786	11,950	778,684	2,215,628	1,011,279	1,347,206	2,358,485	149,260	702,440	2,028,557	278	16,143	1,563,013	836,804
November	4,161,867	2,316	9,637,643	2,429,421	1,346,806	10,586	735,405	2,257,986	1,045,243	910,981	1,956,224	188,889	712,326	1,574,807	296	13,317	1,521,046	806,756
December	4,258,313	2,393	10,190,962	2,497,925	1,348,865	10,536	725,942	2,377,116	1,156,854	1,064,414	2,221,268	258,339	750,971	1,567,128	294	13,182	1,579,155	843,111
<b>HALF-YEAR TOTAL</b>	<b>25,474,937</b>	<b>2,351</b>	<b>59,891,588</b>	<b>15,207,686</b>	<b>8,932,753</b>	<b>68,450</b>	<b>4,434,866</b>	<b>13,521,294</b>	<b>6,351,517</b>	<b>6,290,999</b>	<b>12,642,516</b>	<b>999,397</b>	<b>4,084,626</b>	<b>10,600,513</b>	<b>304</b>	<b>92,198</b>	<b>9,474,920</b>	<b>5,063,862</b>
<b>YEAR TOTAL</b>	<b>51,046,893</b>	<b>2,372</b>	<b>121,059,606</b>	<b>30,355,868</b>	<b>19,017,069</b>	<b>142,833</b>	<b>8,785,244</b>	<b>27,402,945</b>	<b>13,253,083</b>	<b>11,660,849</b>	<b>24,913,932</b>	<b>2,381,804</b>	<b>8,059,911</b>	<b>17,417,405</b>	<b>338</b>	<b>168,460</b>	<b>18,865,471</b>	<b>10,054,207</b>
<b>PERCENTAGE DISPOSAL FOR YEAR</b>	-	-	-	25.1	15.7	0.1	7.2	22.6	10.9	9.6	20.5	2.0	6.6	14.4	-	0.1	15.6	8.3



APPENDIX V  
Destination of Exports of Refined Products from Trinidad & Tobago - 1969  
(All Quantities in bbls)

	Totals	% of Total Exports	Crude Petroleum Exported	L.P.G.	Aviation Turbine Fuel	Aviation Gasolene	Motor Gasolene	Kerosines	Gas and Diesel Oils	Fuel Oils	Lubes and Greases	Asphaltic Products	Other Refined <sup>1</sup> & Petrochemicals
<b>North America</b>													
Canada	2,568,465	1.770	2,643,490		(9,560,127)		140,522		1,307,883	818,072	301,988		
U.S.A.	84,483,349	58.234			9,560,127		6,845,288	843,111	3,678,035	62,418,531	200,818		937,439
<b>TOTAL N.A.</b>	<b>87,051,814</b>	<b>60.004</b>	<b>2,643,490</b>		<b>9,560,127</b>		<b>6,985,810</b>	<b>843,111</b>	<b>4,985,918</b>	<b>63,236,603</b>	<b>502,806</b>		<b>937,439</b>
<b>Central America</b>													
Canal Zone	673,727	0.464					17,914		201,418	430,136			
Costa Rica	71,970	0.050			12,158		13,924	13,493				26,062	
Honduras	32,356	0.022					9,340					23,016	
Other C.A. <sup>2</sup>	1,383,921	0.954			167,991		446,120	57,288	514,379	69,343		44,076	
<b>TOTAL C.A.</b>	<b>2,161,974</b>	<b>1.490</b>			<b>180,149</b>		<b>476,712</b>	<b>70,781</b>	<b>715,797</b>	<b>499,479</b>		<b>93,154</b>	
<b>South America</b>													
Argentina	691,942	0.477							691,942				
Brazil	2,904,213	2.002					2,605,721				298,486		6
French Guiana	482,975	0.333		11,281		7,530	90,694	22,646	339,026	3,466	3,535	4,794	3
Guyana	3,786,383	2.610		33,883		25,750	305,787	238,394	820,319	2,340,005	5,470	15,263	1,512
Surinam	2,530,338	1.744		47,874	20,427	35,867	184,621	110,960	713,548	1,372,405	4,270	39,331	1,035
Uruguay	8,553	0.006									8,553		
Other S.A. <sup>3</sup>	51,048	0.035			1,725	3,815	989	3,165	2,277		39,077		
<b>TOTAL S.A.</b>	<b>10,455,452</b>	<b>7.207</b>		<b>93,038</b>	<b>22,152</b>	<b>72,962</b>	<b>3,187,812</b>	<b>375,165</b>	<b>2,567,112</b>	<b>3,715,876</b>	<b>359,391</b>	<b>59,388</b>	<b>2,556</b>
<b>West Indian Islands</b>													
British <sup>4</sup>	1,946,701	1.342		61,776	189,640	56,544	344,213	485,600	535,672	139,402	101,220	31,140	1,494
French <sup>5</sup>	794,391	0.548		123,804		10,793	48,542	45,357	126,201	379,761	23,153	36,360	420
Netherlands <sup>6</sup>	2,647,305	1.825			31,565	419,253	877,257	708	1,048,812	269,697			13
Puerto Rico	2,518,677	1.736			360,930	1,158,060	369,347	630,340					
Virgin Islands	1,312,428	0.905	2,095,106	11	74,205	10,947	257,611	138,833	90,984	732,372	217	7,236	12
Other W. I. Islands <sup>7</sup>	68,589	0.047		5,400		6,405	2,973		26,173	20,152	7,486		
<b>TOTAL W. I. Islands</b>	<b>9,288,091</b>	<b>6.403</b>	<b>2,095,106</b>	<b>190,991</b>	<b>656,340</b>	<b>1,662,002</b>	<b>1,899,943</b>	<b>1,300,838</b>	<b>1,827,842</b>	<b>1,541,384</b>	<b>132,076</b>	<b>74,736</b>	<b>1,939</b>
<b>Europe</b>													
Denmark	388,185	0.268						274,404	113,781				
Federal Rep. of Germany	286,812	0.198				165,751				55,106			65,955
Italy	313,991	0.216											313,991
Netherlands	1,048,862	0.723				68,662		686,395					293,805
Spain	578,550	0.399		578,550									
Sweden	11,695,034	8.061				2,306,139		6,202,422	3,113,704	72,769			
United Kingdom	5,589,717	3.853	1,400,649	270,895		3,113,014	78,681	1,729,018	138,425	135,300			124,384
<b>TOTAL Europe</b>	<b>19,901,151</b>	<b>13.718</b>	<b>1,400,649</b>	<b>849,445</b>		<b>5,653,566</b>	<b>78,681</b>	<b>8,892,239</b>	<b>3,365,910</b>	<b>263,175</b>			<b>798,135</b>
<b>Others</b>													
Africa <sup>8</sup>	2,881,227	1.986		3,260	245,117	154,261	400,476	34,845	1,221,954	785,783	35,531		
Canary Islands	293,565	0.202							293,565				
Japan	2,824,887	1.947			2,824,887								
Phillipines	290,750	0.200			290,750								
<b>TOTAL Others</b>	<b>6,290,429</b>	<b>4.336</b>		<b>3,260</b>	<b>3,360,754</b>	<b>154,261</b>	<b>400,476</b>	<b>34,845</b>	<b>1,515,519</b>	<b>785,783</b>	<b>35,531</b>		
<b>TOTAL CARGOES</b>	<b>135,148,911</b>	<b>93.158</b>		<b>1,136,734</b>	<b>13,779,522</b>	<b>7,668,693</b>	<b>13,029,434</b>	<b>11,516,979</b>	<b>14,978,098</b>	<b>70,042,300</b>	<b>1,122,958</b>	<b>134,124</b>	<b>1,740,069</b>
<b>FOREIGN BUNKERS</b>	<b>9,926,212</b>	<b>6.842</b>			<b>120,841</b>	<b>5,881</b>			<b>1,215,143</b>	<b>8,575,711</b>	<b>8,580</b>		<b>56</b>
<b>TOTAL EXPORTS</b>	<b>145,075,123</b>	<b>100.000</b>	<b>6,139,245<sup>a</sup></b>	<b>1,136,734</b>	<b>13,900,363</b>	<b>7,674,574</b>	<b>13,029,434</b>	<b>11,516,979</b>	<b>16,193,241</b>	<b>78,618,011*</b>	<b>1,131,538</b>	<b>134,124</b>	<b>1,740,125</b>

<sup>a</sup>Revised data

\*Provisional

Tucupita Fuel (Fuel Oils) Transhipped: - 148,427 of which 89,317 went to Surinam 59,110 went to Canal Zone.

<sup>1</sup>Total exports of "Other Refined Products" was 4,517 barrels. Guyana - 1512 Surinam - 1035 British West Indies - 1494 Foreign Bunkers - 56 French West Indies - 420.

<sup>2</sup>Other Central America - British Honduras 43,002; El Salvador 33,667; Guatemala 1,161,857; Mexico 17,959 and Panama 90,773.

<sup>3</sup>Other South America - Colombia 51,041; Venezuela 7.

<sup>4</sup>British, Antigua, Bahamas, Bermuda, Dominica, Grand Cayman, Grenada, Jamaica, Montserrat, St. Kitts, St. Lucia, and St. Vincent.

<sup>5</sup>French: Guadeloupe, Martinique and St. Maarten.

<sup>6</sup>Netherlands: Aruba, Curacao.

<sup>7</sup>Other West Indian Islands: Dominican Republic 19,809 and Haiti 41,294.

<sup>8</sup>Africa: Cameroon, Congo, Dahomey, Gambia, Ghana, Guinea, Liberia, Libya, Morocco, Mozambique, Nigeria, Republic of Congo, Senegal, Sierre Leone, South Africa, Spanish Sahara, Tojo and Tunisia.

APPENDIX V  
Destination of Exports of Crude and Refined Products from Trinidad & Tobago – 1970  
(All Quantities in bbls)

	Totals	% of Total Exports	Crude Petroleum Exported	L.P.G.	Aviation Turbine Fuel	Aviation Gasolene	Motor Gasolene	Kerosine	Gas and Diesel Oils	Fuel Oils	Lubes & Greases	Asphaltic Products	Other Refined <sup>1</sup> & Petrochemicals
<b>North America</b>													
Canada	784,943	0.537					319,701		209,854		226,124		29,264
U.S.A.	84,934,695	58.053	265,871		8,546,765		3,729,612	4,839,074	613,607	66,391,942	234,695		579,000
<b>TOTAL N.A.</b>	<b>85,719,638</b>	<b>58.590</b>	<b>265,871</b>		<b>8,546,765</b>		<b>4,049,313</b>	<b>4,839,074</b>	<b>823,461</b>	<b>66,391,942</b>	<b>460,819</b>		<b>608,264</b>
<b>Central America</b>													
Canal Zone	513,175	0.350					9,000		142,113	360,233	1,829		
Costa Rica	89,159	0.061					9,000		39,259		21,084		
Honduras	46,992	0.032			24,364		6,500				16,128		
Other C.A. <sup>2</sup>	312,617	0.214					31,368	10,863	216,294	1,320	46,386		
<b>TOTAL C.A.</b>	<b>961,943</b>	<b>0.657</b>			<b>24,364</b>		<b>55,868</b>	<b>10,863</b>	<b>397,666</b>	<b>361,553</b>	<b>85,427</b>		
<b>South America</b>													
Argentina	97,800	0.066							97,800				
Brazil	3,891,281	2.660					3,487,082				404,180		19
French Guiana	458,031	0.313		13,477		6,611	86,555	22,807	317,717	5,393	5,324		147
Guyana	4,332,173	2.961		27,641	11,792	28,579	525,227	225,761	873,288	2,618,499	11,231	8,426	1,729
Surinam	3,390,958	2.318		20,952	4,353	11,779	204,303	112,184	823,640	2,169,243	9,669	33,726	1,109
Paraguay	105	0.000									105		
Uruguay	4,439	0.003									4,439		
Other S.A. <sup>3</sup>	512,658	0.350				2,887	411,747	11,431	27,908		58,685		
<b>TOTAL S.A.</b>	<b>12,687,445</b>	<b>8.671</b>		<b>62,070</b>	<b>16,145</b>	<b>49,856</b>	<b>4,714,914</b>	<b>372,183</b>	<b>2,140,353</b>	<b>4,793,135</b>	<b>493,633</b>	<b>42,152</b>	<b>3,004</b>
<b>West Indian Islands</b>													
British <sup>4</sup>	1,711,878	1.171	1,173,553	67,462	251,131	38,639	268,129	506,475	304,016	124,416	95,966	50,656	4,988
French <sup>5</sup>	967,297	0.661		113,371	31	12,972	155,969	92,401	132,339	410,092	28,280	21,246	596
Netherlands <sup>6</sup>	2,966,699	2.027				732,718	1,258,225		407,493	568,263			
Puerto Rico	1,769,268	1.209	885,300		86,954	280,213	871,093	530,636	372				
Virgin Islands	3,153,068	2.156	6,344,216	173	24,845	11,192	274,235	269,277	142,077	2,429,615	13	1,604	37
Other W.I. Islands <sup>7</sup>	250,165	0.171				4,661	47,808	25,193	46,633	115,071	10,744		55
<b>TOTAL W.I. Islands</b>	<b>10,818,375</b>	<b>7.395</b>	<b>8,403,069</b>	<b>181,006</b>	<b>362,961</b>	<b>1,080,395</b>	<b>2,875,459</b>	<b>1,423,982</b>	<b>1,032,930</b>	<b>3,647,457</b>	<b>135,003</b>	<b>73,506</b>	<b>5,676</b>
<b>Europe</b>													
Belgium	11,026	0.007									11,026		
Denmark	424,411	0.290							424,411				
France	468,519	0.320			468,519								
Greece	197,978	0.135								197,978			
Italy	315,433	0.215								111,641			203,792
Netherlands	749,119	0.512							516,825				232,294
Norway	17,752	0.012								17,752			
Spain	482,139	0.330			482,139								
Sweden	13,286,688	9.081					2,786,982		6,465,106	4,034,600			
U. K.	5,473,449	3.742				335,305	429,146	3,257,101	90,757	578,037	518,754	49,836	214,513
<b>TOTAL Europe</b>	<b>21,426,514</b>	<b>14.645</b>			<b>1,285,963</b>	<b>429,146</b>	<b>6,044,083</b>	<b>90,757</b>	<b>7,984,379</b>	<b>4,880,725</b>	<b>60,862</b>		<b>650,599</b>
<b>Others</b>													
Africa	2,147,064	1.468			82,742	31,890	195,436	174,149	745,247	882,395	35,205		
Canary Islands	469,393	0.322							130,119	339,274			
Japan	965,377	0.659			965,377								
Phillippines	217,421	0.149			217,421								
Antartica	96,589	0.066			91,999				4,590				
High Seas*	446,186	0.304							123,258	322,928	35,205		
<b>TOTAL – Others</b>	<b>4,342,030</b>	<b>2.969</b>			<b>1,357,539</b>	<b>31,890</b>	<b>195,436</b>	<b>174,149</b>	<b>1,003,214</b>	<b>1,544,597</b>	<b>35,205</b>		
<b>TOTAL CARGOES</b>	<b>135,955,945</b>	<b>92.927</b>	<b>8,668,940</b>	<b>243,076</b>	<b>11,593,737</b>	<b>1,647,155</b>	<b>17,905,407</b>	<b>6,911,008</b>	<b>13,382,003</b>	<b>81,619,409</b>	<b>1,270,949</b>	<b>115,658</b>	<b>1,267,543</b>
<b>FOREIGN BUNKERS</b>	<b>10,348,975</b>	<b>7.073</b>			<b>134,181</b>	<b>19,223</b>		<b>191</b>	<b>1,238,678</b>	<b>8,944,782</b>	<b>11,920</b>		
<b>TOTAL EXPORTS</b>	<b>146,304,920</b>	<b>100.000</b>	<b>8,668,940</b>	<b>243,076</b>	<b>11,727,918</b>	<b>1,666,378</b>	<b>17,905,407</b>	<b>6,911,199</b>	<b>14,620,681</b>	<b>90,564,191</b>	<b>1,282,869</b>	<b>115,658</b>	<b>1,267,543</b>

Total Fuel (Fuel Oils) Transhipped – 128,715

\*Countries not detailed.

<sup>1</sup>Total Exports of "Other Refined Products" was 5,116 barrels. 1,729 Guyana; 1,109 Surinam; 1,424 British West Indies; 55 Haiti; 596 French Islands; 37 Virgin Islands; 19 Brazil; 147 French Guiana.

<sup>2</sup>Other Central America: El Salvador (31,232); Guatemala (41,126); Mexico (175,112); Nicaragua (50,296); Panama (14,851).

<sup>3</sup>Other South America: Colombia (72,423); Countries not detailed (440,235).

<sup>4</sup>British: Antigua, Bahamas, Barbados, Bermuda, Dominica, Grand Cayman, Grenada, Jamaica, Montserrat, St. Kitts, St. Lucia, and St. Vincent.

<sup>5</sup>French: Guadeloupe, Marie Galante, Martinique, St. Barths, St. Maarten.

<sup>6</sup>Netherland: Curacao.

<sup>7</sup>Other West Indian Islands: Cuba (115,071); Dominican Republic (127,334) and Haiti (7,760).

<sup>8</sup>Africa: Congo, Dahomey, Ghana, Guinea, Ivory Coast, Liberia, Nigeria, Republic of Congo, Senegal, Sierra Leone, Tojo.

**APPENDIX VI**  
**Movement of Refinery Products – 1970**  
*(Quantities in barrels)*

Inventory Name	Opening Inventory	Production	Imports	Total	Purchases etc. from other Pet Markets	Sales etc. to other Petroleum Markets	Local Consumption				Exports		Gains and Losses	Closing Inventory	Totals
							Own Use	Retails etc.	Local Bunkers	Total	Cargoes	Foreign Bunkers			
Liquified Gasses	2,528	403,361	1,624 2,581*	407,513	292,998	292,998	757	162,726		163,483	243,076		796	158	407,513
Aviation Gasolines	133,669	1,677,244	9,456 8,089*	1,822,950	75,740	75,740	17	8,041	9,629	17,687	1,647,155	19,223	3	138,882	1,822,950
Motor Gasolines	1,006,211	19,391,802	248,934	20,655,036	2,278,526	2,293,977	14,436	1,309,080		1,323,516	17,905,155	–	747	1,410,167	20,639,585
Domestic Gasolines	41	44		85	15,522	71		15,247		15,247	252		(10)	47	15,536
Aviation Turbine Fuels	464,823	12,140,638	45,740* 1,303*	12,651,201	1,044,594	1,101,097	41	232,245	158,188	390,474	11,593,737	134,181	(135)	476,441	12,594,698
Kerosine	218,127 <sup>a</sup>	6,000,933	937,142	7,157,505	690,032	633,529	1,245	251,168		252,413	6,817,912	191	80	143,412	7,214,008
White Spirit	2,854	10,999		13,853	6,093	6,093	2,675	6,164		8,839	2,679		(57)	2,392	13,853
Vaporizing Oil	2,222	88,209		90,431	4	4		4		4	90,417			10	90,431
Gas Oil	700,174	14,160,892	234,731	15,095,797	2,833,069	2,827,238	144,666	387,620	202,169	734,455	13,275,681	340,766	(969)	751,695	15,101,628
Marine Diesel	55,641	1,107,821	2,961 56,847*	1,166,423	1,090,886	1,091,837	312	24,417	5,014	29,743	106,322	897,912	(5,270)	136,765	1,165,472
Fuel Oils	2,704,480	91,500,725	275,100	94,537,152	9,326,713	9,331,603	333,945	182,663	1,004	517,612	81,619,409	8,944,782	(35,378)	3,485,837	94,532,262
Tucupita Fuels	100,898	(1,288)	266,345	365,955			84,931	133,630		218,561	128,715			18,679	365,955
Lubes and Greases	112,839	1,260,864	68,954	1,442,657	21,295	21,295	7,653	48,208	1,513	57,374	1,270,949	11,920	411	102,003	1,442,657
Asphalt Products	13,021	196,427	642	210,090	183,312	183,312	5,082	69,615		74,697	115,658	–	(265)	20,000	210,090
Unfinished Oils	848,444 <sup>a+b</sup>	(142,771)	270,335	976,008			1,908			1,908			8	974,092	976,008
Petrochemicals	207,072 <sup>b</sup>	1,362,729		1,569,801	4,570	4,570	1,565	4,666		6,231	1,262,427		4	301,139	1,569,801
Other Finished Products	18,591	13,399	5,562	37,552	11,542	11,542	3,034	17,712		20,746	5,116		85	11,605	37,552
<b>TOTAL</b>	<b>6,490,737</b>	<b>149,173,316</b>	<b>2,170,001</b>	<b>157,834,054</b>	<b>17,874,896</b>	<b>17,874,906</b>	<b>517,336</b>	<b>2,719,576</b>	<b>377,517</b>	<b>3,614,429</b>	<b>135,955,945</b>	<b>10,348,975</b>	<b>(39,950)</b>	<b>7,954,645</b>	<b>157,834,044</b>

<sup>a</sup>As of January 1970 Intermediate Kerosine and off spec Normal Paraffins, which were usually included in Kerosine, are now classed as Unfinished

<sup>b</sup>As of January 1970 B.T. Concentrate and Xylene were classed as Unfinished Oils

( ) Brackets indicate a negative quantity

<sup>c</sup>Not included in TOTAL

\*Off-spec products returned to Texaco

APPENDIX VII

Movement of Crude and C.H.P.S. year ended 31.12.70 (in barrels)

Month	Production & C.H.P.S.	Imports	Decrease in Inventories	Totals	Purchases & Exchanges	Sales and Exchanges	Own Use	To Refinery	Exports	Gains & Losses	Total
January	4,545,565	8,747,248	237,504	13,530,317	2,881,637	2,881,637	654	13,179,806	271,032	78,825	13,530,317
February	3,993,035	9,260,207	(647,458)	12,605,784	2,601,926	2,601,926	531	11,826,599	617,784	160,870	12,605,784
March	4,389,708	8,765,407	1,203,280	14,358,395	2,418,126	2,418,126	493	13,453,031	916,278	(11,407)	14,358,395
April	4,237,061	10,259,524	(943,296)	13,553,289	2,726,127	2,726,127	544	12,925,786	564,314	62,645	13,553,289
May	4,333,826	9,642,591	302,519	14,278,935	2,613,570	2,613,570	532	13,691,260	513,603	73,540	14,278,935
June	4,143,658	9,468,909	(248,091)	13,364,476	2,309,688	2,309,688	694	12,235,843	1,121,389	6,550	13,364,476
Jan.—June	25,642,853	56,143,886	(95,542)	81,691,196	15,551,074	15,551,074	3,448	77,312,325	4,004,400	371,023	81,691,196
July	4,290,489	9,713,054	211,537	14,215,080	2,441,838	2,441,838	544	13,160,544	912,886	141,106	14,215,080
August	4,261,738	9,448,924	401,429	14,112,091	2,424,861	2,424,861	399	13,090,763	1,020,836	93	14,112,091
September	4,182,032	10,118,694	323,348	14,624,074	2,355,593	2,355,593	519	13,072,862	1,327,296	223,397	14,624,074
October	4,365,608	9,668,829	(681,045)	13,353,392	2,892,852	2,892,852	619	12,759,005	434,634	159,134	13,353,392
November	4,171,956	8,663,622	(350,226)	12,485,352	2,737,968	2,737,968	560	11,906,749	481,989	96,054	12,485,352
December	4,268,355	9,518,129	431,254	14,217,738	2,832,321	2,832,321	457	13,558,024	486,899	172,358	14,217,738
July—Dec.	25,540,178	57,131,252	336,297	83,007,727	15,485,433	15,485,433	3,098	77,547,947	4,664,540	792,142	83,007,727
Grand Total	51,183,031	113,275,138	240,755	164,698,923	31,036,507	31,036,507	6,546	154,860,272	8,668,940	1,163,165	164,698,923

**APPENDIX VIII**  
**Summary of Crude Oil Assessed for Crown Royalty with Prices and Analysis, 1970**  
*(For half-yearly Assessment Periods Ending 30th June and 31st December)*  
1 Barrel = 34.9726 I.G.

Company	Net Royalty Production Barrels	Royalty		Sub Division of (Royalty) Crude into Products as per R.L.E.I. Analysis												Crude Oil Weighted Av. Gravity A. P. I.	
		10% Assessed Barrels	Value \$	Average Price \$/Bbls.	Light Fractions			Gas Oil					Fuel Oil				
					Quantity Barrels	Percentage	Tetra Ethyl Lead to blend to 70/72 Octane Gas. Mls.	53-57 D.I. Barrels	48-52 D.I. Barrels	43-47 D.I. Barrels	No. 2 Fuel Barrels	Total Gas Oils Barrels	Per- centage	Quantity Barrels	Per- centage		
Trinidad Tesoro Co. Ltd. . . . .	2,150,285	215,029	1,186,715.00	5.52	25,315	11.77	1,569,498.24		153			61,986	62,139	28.90	127,575	59.33	20.9
Dominion Oil Ltd. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Premier Consolidated Oilfields Limited . . . . .	25,735	2,574	12,748.00	4.95	350	13.6	57,474.90	—	158	214	458	830	32.2	1,394	54.2	25.9	
Estate of Timothy Roodal . . . . .	264	26	119.00	4.57	—	—	—	—	—	—	8	8	29.9	18	67.8	20.4	
Shell Trinidad Limited . . . . .	1,349,613	134,961	690,720.00	5.12	37,917	28.1	16,558,265.97	16,601	—	7,608	5,789	29,998	22.2	67,046	49.7	29.1	
Trinidad Canadian Oilfields Limited . . . . .	198,717	19,872	96,419.00	4.85	4,908	24.7	1,193,373.30	129	784	—	2,935	3,848	19.4	11,116	55.9	27.0	
Trinidad Northern Areas Limited . . . . .	12,175,004	1,217,500	5,294,071.00	4.35	215,271	17.7	72,250,633.98	83,314	78,102	—	—	161,416	13.2	840,813	69.1	35.2	
Texaco Trinidad Inc. . . . .	7,762,615	776,262	3,943,419.00	5.08	117,410	15.1	27,417,078.47	82,884	44,124	172	126,762	253,942	32.7	404,910	52.2	21.5	
<b>Total and Averages for First Half-Year . . . . .</b>	<b>23,662,233</b>	<b>2,366,224</b>	<b>11,224,211.00</b>	<b>4.74</b>	<b>401,171</b>	<b>16.95</b>	<b>119,046,324.86</b>	<b>182,928</b>	<b>123,321</b>	<b>7,994</b>	<b>197,938</b>	<b>512,181</b>	<b>21.65</b>	<b>1,452,872</b>	<b>61.40</b>	<b>25.1</b>	
Trinidad Tesoro Co. Ltd. . . . .	2,397,274	239,727	1,696,587.00	7.08	26,347	11.0	1,823,316.00	—	—	179	67,464	67,643	28.21	145,737	60.8	23.7	
Dominion Oil Ltd. . . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Premier Consolidated Oilfields Limited . . . . .	20,880	2,088	13,270.00	6.36	312	14.9	46,078.20	—	304	—	406	710	34.0	1,066	51.1	26.1	
Estate of Timothy Roodal . . . . .	135	14	84.00	6.00	1	2.2	—	—	—	—	4	4	29.6	9	68.2	19.8	
Shell Trinidad Limited . . . . .	1,345,928	134,593	860,055.00	6.39	40,694	30.2	15,685,941.76	17,549	—	7,848	4,828	30,225	22.5	63,674	47.3	30.3	
Trinidad Canadian Oilfields Limited . . . . .	181,038	18,104	112,849.00	6.23	4,538	25.1	1,607,877.39	107	597	—	2,579	3,283	18.1	10,283	56.8	26.7	
Trinidad Northern Areas Limited . . . . .	12,216,083	1,221,608	7,366,325.00	6.03	214,010	17.5	58,303,041.30	80,835	81,508	—	—	162,343	13.3	845,255	69.2	24.9	
Texaco Trinidad Inc. . . . .	7,324,733	732,473	4,684,333.00	6.39	116,279	15.9	26,944,862.70	84,291	40,286	—	124,575	249,152	34.0	367,042	50.1	26.3	
<b>Totals and Averages for Second Half-Year . . . . .</b>	<b>23,486,071</b>	<b>2,348,607</b>	<b>14,733,503.00</b>	<b>6.27</b>	<b>402,181</b>	<b>17.1</b>	<b>104,411,117.35</b>	<b>182,782</b>	<b>122,695</b>	<b>8,027</b>	<b>199,856</b>	<b>513,360</b>	<b>21.9</b>	<b>1,433,066</b>	<b>61.0</b>	<b>25.4</b>	
<b>YEARS TOTALS AND AVERAGES . . . . .</b>	<b>47,148,304</b>	<b>4,714,831</b>	<b>25,957,714.00</b>	<b>5.50</b>	<b>803,352</b>	<b>17.0</b>	<b>223,457,442.21</b>	<b>365,710</b>	<b>246,016</b>	<b>16,021</b>	<b>397,794</b>	<b>1,025,541</b>	<b>21.8</b>	<b>2,885,938</b>	<b>61.2</b>	<b>24.6</b>	

APPENDIX IX  
ROYALTY ASSESSMENT

The Royalty assessed on the crude oil, natural gasoline and natural gas produced on Crown Oil Mining Leases for each half-yearly period during 1968, 1969 and 1970 is shown in the following Table:—

Source of Revenue	ASSESSMENT FOR HALF-YEARLY PERIOD ENDING					
	31.12.70	30.6.70	31.12.69	30.6.69	31.12.68	30.6.68
			\$		£	
Royalty on Natural Gas . . . . .	287,358.00	284,309.00	333,810.31	328,528.93	319,981.83	324,853.16
Royalty on Natural Gasoline . . . . .	32,002.00	33,552.00	41,806.82	38,347.71	42,054.10	41,530.06
Minimum Rent not Offset by Royalty on Crude Oil . . . . .	801,885.00	505,527.00	450,113.36	450,113.37	446,159.93	446,159.93
Royalty on Crude Oil . . . . .	14,733,503.00	11,224,211.00	11,655,812.48	12,441,393.81	14,057,594.95	16,121,992.28
Half Yearly Total . . . . .	15,854,748.00	12,047,599.00	12,481,542.97	13,248,338.37	14,865,790.81	16,934,535.43
YEARLY TOTALS . . . . .	27,902,347.00		25,729,881.34		31,800,326.24	

The Volumes upon which the above assessments were made are as follows:—

Substance assessed for Royalty	Unit	HALF-YEARLY PERIOD ENDING					
		31.12.70	30.6.70	31.12.69	30.6.69	31.12.68	30.6.68
Natural Gas . . . . .	M.C.F.	19,157,183	18,953,950	22,254,020	21,901,927	21,322,121	21,656,875
Natural Gasoline . . . . .	I.G.	1,769,967	1,878,133	2,026,487	1,952,690	2,101,916	2,124,466
Crude Oil – Gross . . . . .	bbf.	23,686,131	23,878,410	26,013,197	27,826,620	30,818,288	32,195,689
Crude Oil used free of Royalty . . . . .	bbf.	200,060	216,177	23,715	28,363	33,833	33,476
Crude Oil Net . . . . .	bbf.	23,486,071	23,662,233	25,989,482	27,798,257	30,784,455	32,162,213
Crude Oil Average Royalty Value . . . . .	\$TT.	6.10	4.72	4.48	4.48	4.57	5.01

The data used to evaluate crude oil for Crown Royalty Assessment for each of the last six half-yearly periods together with the royalty rates on Casing Head Petroleum Spirit for each of these periods are shown in the following Table:—

Product	AVERAGE PRICE IN T. & T. CURRENCY PER BARREL OF 34.9726 I.G. FOR HALF-YEAR ENDED					
	31.12.70	30.6.70	31.12.69	30.6.69	31.12.68	30.6.68
Bunker C Grade Fuel . . . . .	6.236736	3.559193	2.983673	2.922059	2.970749	3.467821
No. 2 Fuel . . . . .	7.984711	7.904080	7.659501	7.971725	7.671884	8.175113
43–47 D.I. Gas Oil . . . . .	8.094081	8.019716	7.765212	8.102075	7.782075	8.284823
48–52 D.I. Gas Oil . . . . .	8.129755	8.124895	7.870924	8.207874	7.887798	8.389914
53–57 D.I. Gas Oil . . . . .	8.164854	8.230074	7.976636	8.313673	7.993458	8.495004
70–72 Oct M. Leaded Motor Gas . . . . .	7.510376	7.411376	8.029491	7.619505	7.592638	7.385203
Average Middle rate for sight draft on N.Y. premium in T. & T. cents per \$1.00 U.S. . . . .	2.017465	2.003416	101.355571	101.521271	101.258424	100.172253
Value of Tetra-Ethyl Lead in T.T. cents per millimetre . . . . .	0.406388	0.399139	0.370277	0.361108	0.320961	0.323964
Royalty in T.T. cents per Gallon on Casing Head Petroleum Spirit . . . . .	2.108736	2.080698	2.257247	2.139413	2.132352	2.076715

The half-yearly volume of products to which the above average prices for 1970 were applied respectively in calculating royalty on Crude Oil, will be found in Appendix VIII.

**APPENDIX X**  
**The Asphalt Industry**

The following table shows, for the year 1968, 1969 and 1970, the quantity of Natural Asphalt extracted from the Pitch Lake and the quantities of derived products which were exported and consumed locally.

		— Tons —		
		1968	1969	1970
<b>NATURAL ASPHALT</b>				
Extracted by Works and Hydraulics Department for local use		51,176	50,800	47,595
Extracted by the Trinidad Lake Asphalt Company		84,865	71,695	80,723
<b>TOTAL</b>		<b>136,041</b>	<b>122,495</b>	<b>128,318</b>
Derived Products Manufactured by the Company				
<b>EXPORTED</b>				
Crude Asphalt		—	—	—
Dried Asphalt		56,013	52,238	61,511
Cement Asphalt		1,385	1,190	1,199
<b>TOTAL</b>		<b>57,398</b>	<b>53,428</b>	<b>62,710</b>
<b>LOCAL SALES</b>				
Crude Asphalt		529	168	1,102
Dried Asphalt		340	275	567
Cement Asphalt		55	123	108
<b>TOTAL</b>		<b>924</b>	<b>566</b>	<b>1,777</b>

NOTE:-- The above tabulations 1 long Ton = 2240 lbs.



*The Central Statistical Office Printing Unit  
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